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**Sobering Alternatives:
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allow me to "get by," but is not acceptable professional practice.

The Audio Chain

In any television production system, audio is the key factor in the quality of sound (see Fig. 1). This chain begins with the microphone, which converts sound waves into electrical signals and then terminates in the videotape recorder. Often, the VTR is the final link in the chain, but other professional processes are also included in the chain. These cover the entire range of professional audio equipment, from microphones properly used during sound拾取, to the type of sound to be shot to capture and preserve.

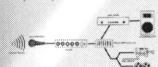


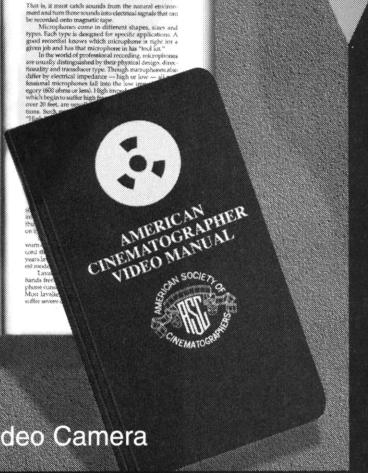
Figure 1

The well-equipped sound recordist uses several types of microphones, mixing devices and recording equipment. A portable audio mixer is necessary for field use and a different type of mixing console for studio use. Other recording equipment, including the headphones and an accurate tapehead, complete the kit.

Microphones

The microphone is a very simple device. Its sole purpose is to convert acoustic energy into electric energy.

82



The Video Camera

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Luminance: The Tonal Range of Video

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Written by Frank Beacham, with contributions from field experts. Thoroughly updated and revised.



The blitz of constantly changing video technology has made an understanding of electronic imaging essential to anyone working in the field of cinematography. The ASC Press now fills that need by publishing a comprehensive video handbook which has taken its place next to the oft-consulted American Cinematographer Manual in every cameraperson's kit bag — the American Cinematographer Video Manual.

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On Our Cover:
Lighted and
framed in heroic
style, the new
Batman (Val
Kilmer) gets ready
to battle Gotham
City's criminals
(photo by Ralph
Nelson).

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WHEN DAVID HEURING ANNOUNCED in April that he was stepping down as editor of *American Cinematographer*, his fellow staffers had no doubts about his destination. During David's seven years at the magazine (the last three as Grand Poobah of the Editorial Dept.), his co-workers had often heard him wax poetic about bratwursts, the Brewers, and the natural beauty of his home state, Wisconsin. More often than not, these fond reminiscences took place at the end of a long workday, accompanied by the mellow strains of David's beloved Martin acoustic. Like his musical idols, Bob Dylan and Neil Young, David has always been tempted to return to his roots.

Unfortunately for *AC*, the peaceful lure of the Midwest finally proved irresistible. Having knighted his fellow staffers as honorary "Cheeseheads" (Wisconsin's slang for its natives), David has given up the frenetic pace of Hollywood for a summer on his lakefront land and a new career in freelance writing. Needless to say, his intelligence, affability and wry wit will be sorely missed.

"I am extremely jealous, because Wisconsin is one of my favorite states in the nation," says Steven Poster, Chairman of the ASC's Publications Committee. "I'll miss David personally, and speaking for the whole committee, I'll also miss working with him. David has been a real partner to me, and he taught me a lot about the world of publishing."

I personally owe David a debt of gratitude for helping me find my niche in Los Angeles. I first met him in the spring of 1991, just after he had been promoted to associate editor by his genial mentor, editor George Turner, whose wife, Jean, had stepped down as second in command. Having recently moved to L.A. from my own hometown of Salem, MA, I was earning a living — albeit unhappily — in a high-stress, low-pay job at a Beverly Hills talent agency. After being

introduced to David by some mutual friends, I quickly found a sympathetic ear. I explained to him that my true career goal was to get back into my former line of work, magazine publishing. Without blinking an eye, he encouraged me to apply for his old job as assistant editor. Upon David's recommendation, the Turners granted me a pleasant and fortuitous job interview, and I joined the staff of *AC* in June of 1991.

Several months later, George decided to join his wife in semi-retirement. With George's blessing, David was quickly and quite deservedly promoted to editor. "David came to us as a skilled writer with a good, strong understanding of motion picture methods and techniques," George Turner reflects. "He had done some motion picture work himself, which was a real asset to us and made him a natural choice to take over as editor. He's also a very personable, easygoing fellow, which made him popular with the rest of the staff, the ASC's members, and the folks he interviewed for the magazine."

After accepting the editorship, David served as my benefactor yet again, advising the ASC's Board of Governors to offer me the post of associate editor. What ensued was a fruitful and always friendly collaboration. David proved to be a true team player, allowing me a great deal of creative freedom and input. His forward-thinking vision for the magazine was soon recognized and applauded by both our readers and the publishing industry. During his tenure as editor, *American Cinematographer* was nominated for eight Maggie Awards by the Western Publications Association, winning three. David's hard work and foresight has helped the magazine maintain its reputation as the industry's most respected professional journal.

In the four years that I've known David, we've become good friends off the job as well. We found common ground in

Bringing It All Back Home



David Heuring's hands-on support of the ASC and *American Cinematographer* will be sorely missed.

our mutual love of film, literature, music and sports, and I was always welcomed to attend his Saturday night "jam sessions." David was great company at both rock concerts and ballgames, and I will miss him on my desperate midday runs to Pink's Famous Hot Dog Stand in Hollywood.

Having been chosen as David's successor (once again with his much-appreciated endorsement), I am quite naturally daunted at the prospect of filling his shoes. In addition to being a talented writer and editor, he is well-liked by everyone in the industry, and boasts a considerable knowledge of both filmmaking in general and cinematography in particular. I will do my best to uphold the tradition of excellence that he embraced.

Neil Young's most famous lyric advises that "it's better to burn out than to fade away." Thankfully, David has done neither. He will continue to be a valued contributor to *AC*, and his articles will also grace the pages of other industry publications. We wish him the best of luck, and sincerely hope that he will save us some good seats for a Packers game.

— Stephen Pizzello

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American Society of Cinematographers

The American Society of Cinematographers is not a labor union or a guild, but is an educational, cultural and professional organization. Membership is by invitation to those who are actively engaged as directors of photography and have demonstrated outstanding ability. ASC membership has become one of the highest honors that can be bestowed upon a professional cinematographer — a mark of prestige and excellence.

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Denny & Terry Clairmont on the Angenieux 25-250HR.

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Terry glances at the busy scheduling board behind him. Every HR slot is filled. "It's the lens they're asking for. So we just ordered another 31 HRs to go with our shipment of new cameras."

"That doubles our HR inventory," adds Denny, "You might say we're committed to the lens."

In a minute Terry turns back to the scheduling board. Denny heads to the projection room to check out some new lenses.



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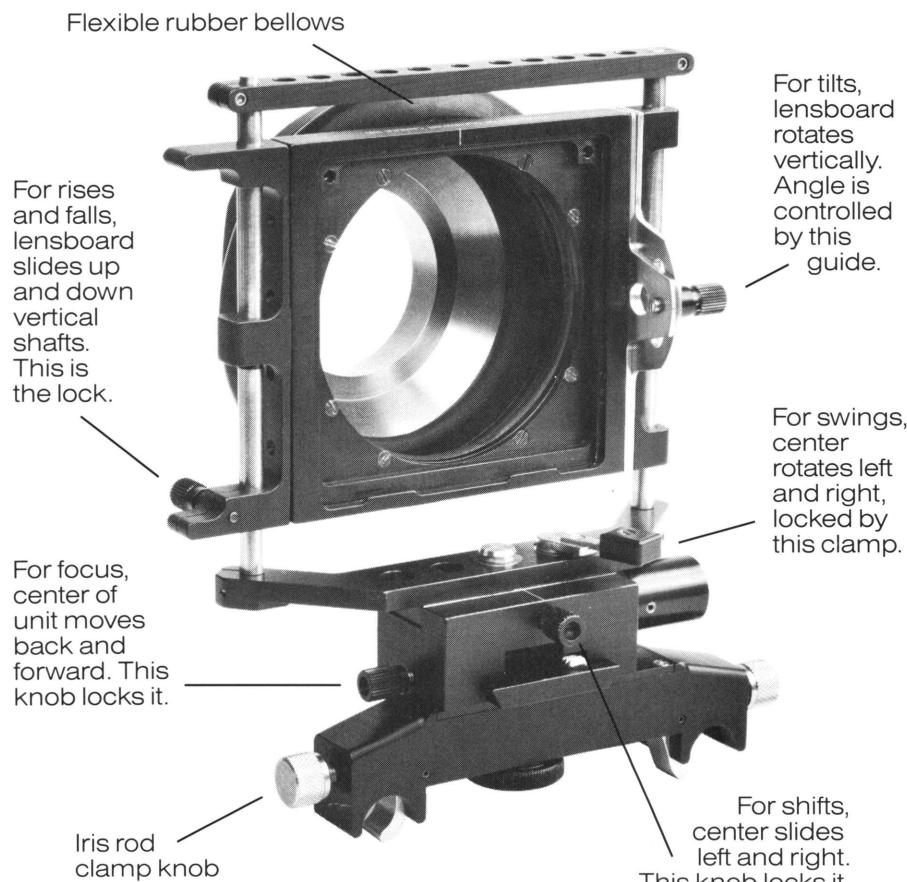
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Shoot head-on into mirrors

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egg-shaped. You can shoot directly head-on into mirrors and not see yourself. Or remove a foreground telephone pole without changing your angle of view.

Almost infinite depth of field

In Ansel Adams' famous still photograph of Mount Williamson, the

mountain range is on the horizon, about a mile away. In front of it, the ground is strewn with boulders, the nearest one three or four feet away. By tilting his lens down, Adams changed the plane of sharp focus from vertical to more nearly parallel with the field of boulders. *Everything is in focus.*

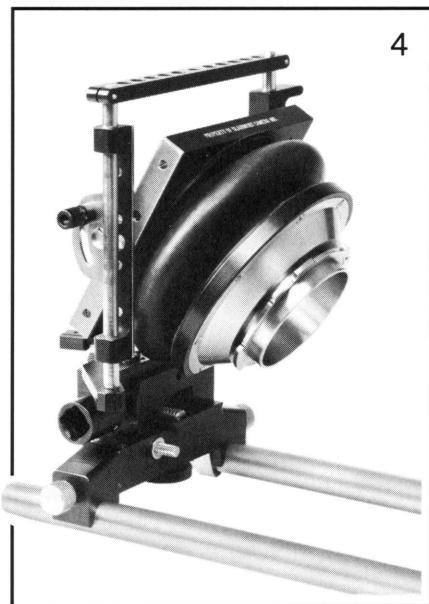
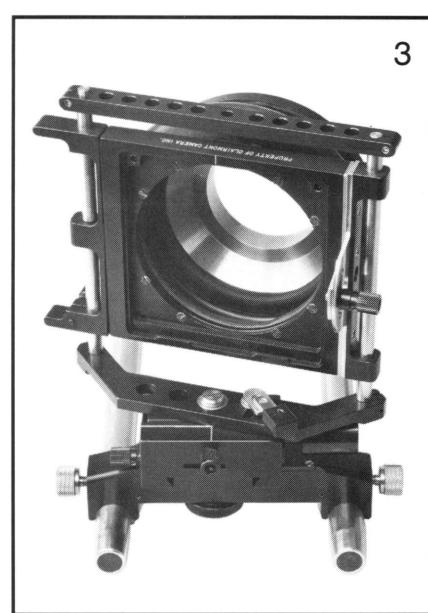
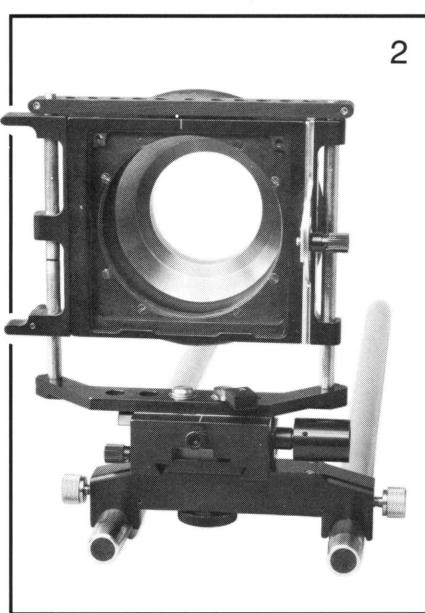
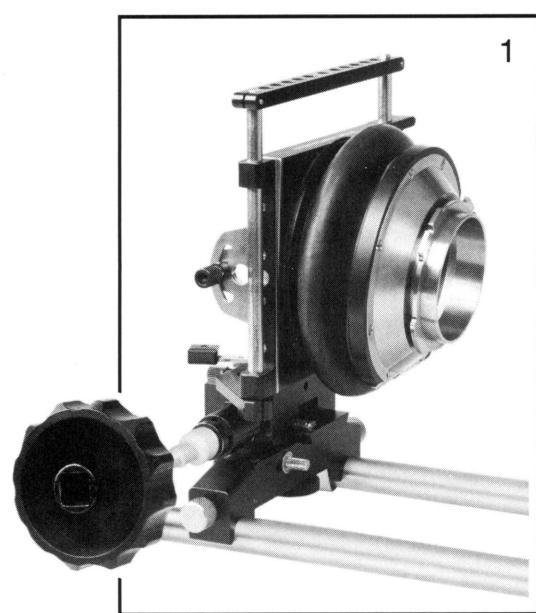
No need to stop way down

Shooting from one side at a 45° angle, you compose a two-shot of a car's driver (near you) and the front-seat passenger (further away). By swinging your lens to the right (to the left in Britain), you can easily hold focus on both people because the plane of sharpness then runs along the front of both faces.

The Swing/Shift is a PL mount system designed and built by Clairmont for our BL and 35-3 cameras.

Controlling focus and shape

The rule is: Tilting/swinging the lens plane alters the *focus*; tilting/swinging the film plane alters the *shape*. With the car two-shot, you swing the lens but you *don't* move the camera body (film



plane). If you tilt the camera body up at a skyscraper, you're tilting the film plane. The skyscraper's shape will be altered — its sides will converge.

Perspective and position control

To keep the sides of skyscrapers and cereal boxes parallel, you have to keep the camera body level. If you'd like to see less foreground (at the bottom) or more skyscraper (at the top), you can shift the image down in the frame by moving the lens laterally up. To suit your composition, you can shift the cereal box up or down or to either side within the frame — while keeping the sides parallel and without altering your angle of view.

1. Lensboard/front in lowest (Fall) position. Note remote focus. Unit is mounted on iris rods. 2. Lensboard/front at far right (Shift) and at highest (Rise) position. Rises and Falls are vertical Shifts, of course. 3. Lensboard/front in far right Swing position. 4. Lensboard/front in extreme upwards Tilt position. Swings and Tilts can be combined.

Close focus for tabletop

The Clairmont Swing/Shift has built-in rack and pinion focussing. You can change focus during a shot without anything touching the lens. The bellows extends, of course, so you can focus down to a few inches. We're adding lenses to the range, including some that are designed for close work.

Photographer impressed

Paul Gaffney is a First Assistant in New York. He has worked, as a still photographer, with view cameras. He used our Swing/Shift on a recent TV commercial shoot. "I was impressed with the *amount* of swing and shift available," he says. "This is a giant step backwards in the right direction."

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Letters

Not Impressed with CG Direction

I believe you have strayed far from the purpose of your magazine. Cinematography is the photography of moving images. As readers, we want to know how that is achieved in different films through the use of lighting, lenses, filters, etc.

The digital effects expansion in recent years seems to have distracted you from your purpose. Digital effects are a postproduction enterprise and, for the most part, should be left to the editors of postproduction magazines. An occasional article is fine, but you are preoccupied with the craft.

With subjects such as lighting, lenses, etc., there is the possibility of applying this knowledge to our own films. This is not the case with digital effects. Your magazine becomes a theoretical exercise, much like a science fiction novel that we can only dream about.

Additionally, there is much more filmmaking going on besides the Hollywood films, within more reasonable budgets where the filmmaker achieves results with photographic skills alone and doesn't depend on electronic wizardry for the final result.

We are waiting to see *AC* return to its fundamental purpose.

— Terry Connell
Greensburg, PA

Call for More Illuminating and Gripping Coverage

Recently I ran across some back issues of *American Cinematographer*. As a new reader, my expectations have been shaped by the recent focus on digital imagery. While I have learned a great deal from these articles, I was pleasantly surprised to find in these not-so-back issues a series titled "Reflections" which set up a cinematic situation and showcased one cinematographer's solution.

What happened to this fantastic feature? I would like to see "Reflections" resurface, and, ideally, have the

ASC Press collect the series into a volume and publish it. I assume that since it isn't listed with the *AC Manual*, baseball caps and back issues, that it doesn't exist, which is a shame. The format provided a peek into the minds of cinematographers dealing with the specifics of how to make a scene work, a luxury that the limits of space can't afford in the course of a normal interview. Yet exactly this type of article is essential to anyone who wants to expand their visual and technical vocabulary.

Another area that I would love to see explored is the relationship between DPs and the professionals who assist their artistry — gaffers, camera operators, even production designers. Your article on *Natural Born Killers* with Richardson and Peschke was informative, but it only skimmed the surface of a crucial yet largely undiscussed partnership. When I worked at a rental house, it was primarily the gaffer who filled out the order for the grip and electric equipment; the gaffer was also the one who had to invent cost-efficient solutions to bridge the gap between the producer's budget and the cinematographer's vision. In many interviews, cinematographers allude to the invaluable assistance of these collaborators, and I'm sure that many would be willing to elaborate. A tandem interview would be ideal. This would be an invaluable service to your readers and relevant to all working professionals in our industry.

— Thom Harp
Anchorage, AK

Benjamin Bergery is currently working on a volume which will combine his classic "Reflections" articles with previously unpublished workshops. The book should be available to readers in late 1996.

— Ed.

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THROUGH THE EYES OF RICK GUNTER

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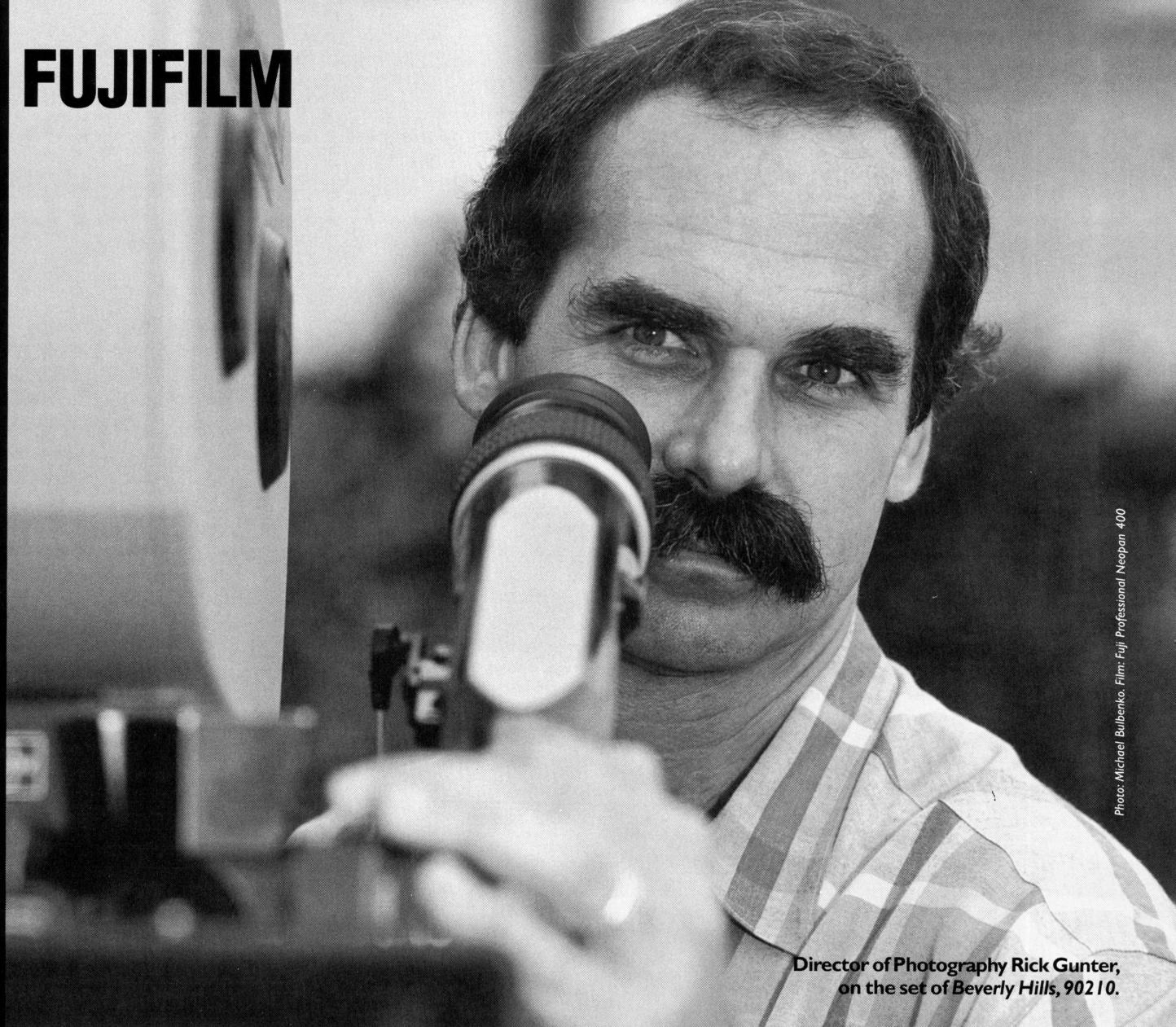


Photo: Michael Bulbenko. Film: Fuji Professional Neopan 400

Director of Photography Rick Gunter,
on the set of *Beverly Hills, 90210*.

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NAB '95: The Times They Are A-Changin'

by Frank Beacham

With the benefit of a little hindsight, NAB '95 is already acquiring the cachet of a watershed event in television history — not because of individual products, but because the long-expected changes brought on by digital technology finally arrived. At NAB '95 it became clear that television as we have known it is about to disappear.

One only had to walk into Sony's "TV Facility of the Future" or into the many "virtual" soundstages to see that change — sweeping, fundamental change — has come. The old-guard broadcast equipment manufacturers are being elbowed out by young, aggressive upstarts from the computing ranks.

The familiar videotape recorder is giving way to the server. Component racks are being replaced by stacks of purring hard-disk drives. Video is all about systems now — networked

computer systems — and the complex software that drives them.

As analog television gives way to digital television, it's causing insecurity and fear among the workers. The careful observer heard it in many of the questions asked at technical sessions. When a question missed the point — and many of them did — there was a lot of rolling of eyes by those "in the know." An invisible wall instantly rose between those clinging to the analog past and those pressing ahead into the digital future.

A salesman in the Sony booth speculated that half of his customers did not understand what Sony was showing at NAB '95. He expressed fear that many television veterans are being left behind.

A television engineer at one of America's great research laboratories privately suggested that the rapid change from analog to digital technology will have a significant human toll. He maintained that there will be a lot of retirements — a passing of the torch to a new generation. HDTV, he predicted, will not come from existing broadcasters, but a new group of entrepreneurs who will re-invent the delivery of over-the-air information and programming.

Not Just Technology

It was also clear from NAB '95 that massive change is not limited to the technology. New forms of competition threaten traditional over-the-air broadcasting. In fact, programming guru Barry Diller warned the broadcasters that they have as little as five years before "a big pipe with a lot of data flowing back and forth" will be available to every home.

Diller predicted that the advertising model that supports broadcasting today is going to be displaced by new forms of direct selling. "The danger for broadcasters is if they don't think expans-

sively, one day the cable operator is going to figure out through an interconnect how to sell in the local market with enormous effectiveness," he said. "There are not enough people in broadcasting with a really sensible plan for using this extra spectrum."

The networks are becoming increasingly fractured and are continually losing audience share, said Diller, who urged broadcasters to develop distinct personalities for themselves in the increasingly cluttered marketplace. "Unless you stand for something, you will lose relevance," he warned.

Re-Inventing HDTV

Throughout its meandering history of nearly two decades, high-definition television has been defined and re-defined depending on the politics of the day. At NAB '95, the new, improved HDTV appears to be more about "flexible use" of the finite broadcast spectrum than picture quality and sound.

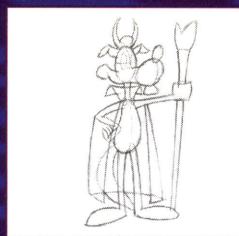
Television broadcasters have long felt that HDTV is a financial loser. Rather than air a single HD channel, station owners want to use digital compression technology to create multiple TV channels and new information services that will fit through the same-size slice of the spectrum they now use for a single NTSC channel.

With only months to go before the "Grand Alliance" of electronics companies gets an advanced television standard from the Federal Communications Commission, HDTV recently went through still another transformation. With HDTV (version 95), broadcasters can create a sort of "do it yourself" service that allows them to sell a wide range of new digital services while showing HD pictures at the same time. It was the Alliance's version of having your cake and eating it too.

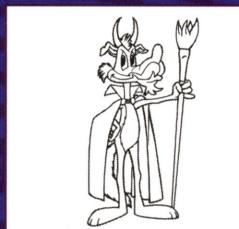
AC Wins Maggie

For the third time in the past three years, *American Cinematographer* has earned a Maggie Award for editorial excellence. The Maggies, which are presented by the Western Publications Association, were handed out at the organization's 38th Annual Awards Banquet, held on April 25 at the Los Angeles Hyatt Hotel. *AC* took top honors in the Special Theme Issue category for the September, 1994 issue, which focused on postproduction. *AC* was also nominated in the category of Best Interview or Profile for staffer Stephen Pizzello's September '94 article on *True Lies*, which featured interviews with director James Cameron and cinematographer Russell Carpenter.

AC has now earned a total of eight Maggie nominations in the past three years. The magazine won two Maggies at the 1993 ceremony — one for Best Communication, Advertising & Entertainment Issue (April '92) and another for Best Interview or Profile (*Twin Peaks: Fire Walk With Me*, Sept. '92, also written by Pizzello).



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If, however, the newly reformulated HDTV appears to be an olive branch to skittish broadcasters, the Grand Alliance has coupled their latest pitch with a warning to the station owners: either join us or be left behind in the information revolution.

"Broadcasters can either take the lead in delivering HDTV programming or abandon the lead to cable, the telcos, DBS and wireless," said Zenith chairman Jerry Pearlman said at a news conference. "The [television receiver] manufacturers will deliver this product."

The new target date is the fall television season of 1997, when two or more U.S. television networks will begin prime-time high-definition broadcasting, Pearlman said. A new generation of HDTV sets will then be on the market. Those sets, he said, will cost a premium of about \$1,500 over comparable NTSC models.

The Zenith chairman said "there's been a very noticeable shift in the attitudes of broadcasters over the last couple of months" because of a "clear understanding" that their allotted HDTV spectrum may be at risk in the new Republican-controlled Congress.

The Grand Alliance thinks they have struck gold by giving all sides what they want. The broadcasters get a variety of new multi-channel and data services, what they term "flexible use," while the FCC can cling to the original mandate of HDTV. If all goes as planned, today's NTSC broadcast television system will be phased out over 15 years.

"Flexible use has become a buzzword," said Glenn A. Reitmeier, director of the HD Imaging and Computing Laboratory at the David Sarnoff Research Center. "Some mistakenly believe that broadcasters have a choice between HDTV and flexible use. Nothing could be further from the truth. I believe HDTV will give broadcasters the greatest possible flexibility."

Reitmeier presented broadcasters with details of the Grand Alliance's new packetized data transport system, which allows the transmission of virtually any combination of video, audio and data over the TV airwaves. He demonstrated a broadband 20-megabit-per-second data pipeline into the home, and showed how many new services could be provided concurrently with the transmission of the full HDTV program, while oth-

ers could be provided in place of the HDTV program at different times of the day.

For example, a local PBS station could broadcast HDTV programs during evening prime-time hours (along with ancillary data services like weather forecasts or stock quotes that would be visible only to people who wanted to use them). Then, during school hours, the station could deliver five simultaneous educational programs to local schools and homes.

To hammer the point home, the Alliance used kiosk presentations to show how their system could simultaneously deliver data with HD images and how interactive advertising could be downloaded into a new breed of smart TV receiver.

"At a time when rival delivery media are aggressively positioning themselves for digital programming and interactive services, this system enables broadcasters to transmit virtually any combination of video, audio and data services, such as sports scores and statistics, electronic program guides and interactive advertising," said James Carnes, president of the Sarnoff Center. "Those and other data services should translate into new revenue streams for the broadcast industry."

The carrot-and-stick approach alternated through NAB presentations. Dick Wiley, chairman of the FCC's Advisory Committee for Advanced Television Service, spoke of the excuses many are using to avoid implementation of broadcast HDTV. "As the digital finish line beckons, a number of discordant and discouraging sounds are emanating from industry and government," Wiley noted.

"If we'd had this kind of vision in the 1950s, I doubt this country would even have color television," Wiley said. "The broadcasters need to realize that the Grand Alliance is their ticket to the digital age."

New Portable Video Formats

Not since the first prototypes of the one-piece camcorder were shown 15 years ago has such dramatic change come to portable video field recording. The next generation of camcorders is all digital, but that's where the similarity ends.

Three new formats (all targeted for electronic newsgathering use) were introduced at NAB '95 — in itself

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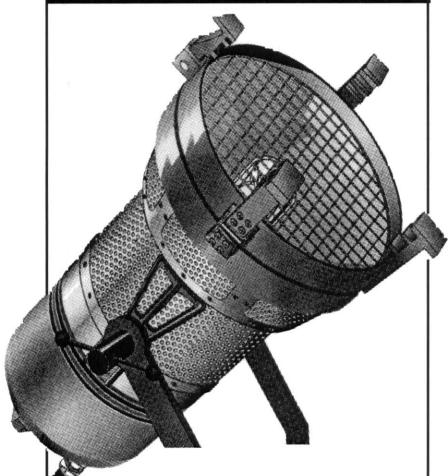
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an NAB record. Panasonic debuted a professional version of the tiny DVC consumer format, Sony introduced a new low-cost digital Betacam format, and Avid/Ikegami unveiled their long-awaited disk-based camcorder.

Though the Avid/Ikegami camcorder ranked as a major technical achievement, the showstopper came from Panasonic, whose subminiature DVCPRO seemed to capture the imagination of working videographers attending the huge trade show. It even captured the imagination of Sony, whose representatives suggested before show's end that their company may even introduce a digital ENG system based on DVC or another tiny tape format to supplement the venerable Betacam line.

"DVC is a great idea," said veteran Betacam videographer Fred Schuh of Right Stop Video, Sarasota, Florida. "People who were waiting for new ENG formats got into the mindset of non-tape, non-linear, and didn't think tape was the way to go. But after seeing how small, lightweight and good quality DVC is, they are going to forget about non-linear."

Schuh expressed disappointment in the size, weight, power consumption and cost of the disk-based camcorder shown at NAB. "I saw something in DVC that was very familiar, that could fit in the palm of my hand, and that costs half the price of what I'm using today," he continued. "And what I saw on the monitor was better quality than Betacam SP. The question is how durable it's going to be in the field. Will it handle the rigors of daily newsgathering?"

DVCPRO, which had the input of CNN and ABC during the design process, uses a 6.35mm cassette that is comparable in size to a standard audiocassette. The system records 4:1:1 component digital video (8-bit, 13.5 MHz sampling) and uses 5:1 DCT-based intra-frame compression. It has two channels of 16-bit PCM audio, a single-track analog cue channel and two independent time-code tracks (LTC and VTC).

One of the most apparent advantages of DVCPRO is the size of the equipment. Panasonic unveiled the 5.5-pound "Video Journalist Camera," the tiniest three-chip professional camcorder ever shown; a complete editing system in a laptop computer package; and a field recorder in a clamshell-style Video Walkman design. A system that used to

require dozens of heavy equipment cases (and hundreds of dollars in excess baggage fees) could now be brought onto a plane as carry-on luggage.

To jump the tape bottleneck in non-linear editing, DVCPRO can be "streamed" at four times normal playback speed onto a hard-disk. As for the cost, Panasonic said that a DVCPRO system can be put together in the \$20,000 range. It is expected to go on the market next year.

Sony also stayed with tape by introducing Betacam SX, a new streamable 18-megabit-per-second, 4:2:2-profile MPEG video acquisition system. The prototype 13.2-pound camcorder, designed to be used with Sony's newly-proposed all-digital networked facility, breaks some new ground in camcorder design. It features a snap-on AC power adapter, has a slot for an internal wireless microphone receiver, offers an auto-focus lens and uses lithium ion batteries. It can record 60 minutes on a Betacam cassette.

Sony's camera V.P., Larry Thorpe, said his company's primary goal is to allow a smooth transition from analog to digital Betacam formats. However, he said, "we are hearing the messages from the industry that there are strata in ENG. For that reason we are studying options on a low-cost, lower-performance camcorder.

"Is DVC a candidate? Yes," Thorpe continued. "Are there other candidates? Yes. We've made no conclusions yet. But it would be something other than Betacam — a smaller package where we go all-out on ergonomics and cost and take a hit on performance and features. There's no question that this kind of system catches the imagination."

Thorpe said Sony showed its own version of a laptop editing system to selected customers in a private hotel suite during NAB. He said the prototype weighs about 16 pounds and uses magneto optical disk technology for recording media.

The long-anticipated Avid/Ikegami disk-based camcorder was greeted like a movie star in a shower of flashing camera strobes at its NAB premiere. Dubbed "CamCutter," the new camcorder made television history as the first tapeless video recording system.

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uses "Fieldpaks," two-pound, 2.4-gigabyte hard-disks that hold 15 to 20 minutes of AVR70 compressed video. By using disk media, the camera operator has a wide range of new options which include nonlinear editing in the camcorder itself.

The shooter can collect and organize selected scenes and build them into a viewable sequence while the camera is on the tripod. The finished segment — with live camera and edited segments — can be aired directly from the CamCutter through any microwave or satellite link.

Back at the studio, FieldPaks can be inserted into Avid's MediaDock docking station, which can be accessed instantly by any Avid non-linear editing system.

The CamCutter, Fieldpak and MediaDock are slated for shipping in the second half of 1995 and will initially be sold through a network of existing Ikegami sales offices. CamCutter will be available as either a single-piece camera/recorder unit or as a dockable system for existing Ikegami HL Unicam cameras. The price of the dockable CamCutter is \$19,000. Single-piece CamCutters will be priced from \$38,000 to \$60,000 depending on camera model. The MediaDock will sell for about \$4,900.

Perhaps the biggest negative to the CamCutter system is the cost of recording media. FieldPaks are priced at \$2,500 each. Avid suggests that the average video crew will need at least four Fieldpaks for normal working operation. The company said it expects the price of recording media to be lower in the future.

Also to be considered is a server that is dedicated to storing video recorded on Fieldpaks. Such secondary archival storage is needed in order to free Fieldpaks for re-use by a videographer in the field.

Power consumption and physical size also appear to be significant factors in the CamCutter system. Though neither Ikegami or Avid offered power consumption specs on the one-piece CamCutter, it was revealed that the CamCutter recording unit alone draws about 19.5 watts. That, combined with an Ikegami HL-57 camera head which uses 16.5 watts, creates a dockable camcorder with a whopping 36 watts of power consumption. By comparison, a Sony BVW-D600 Betacam SP camcorder

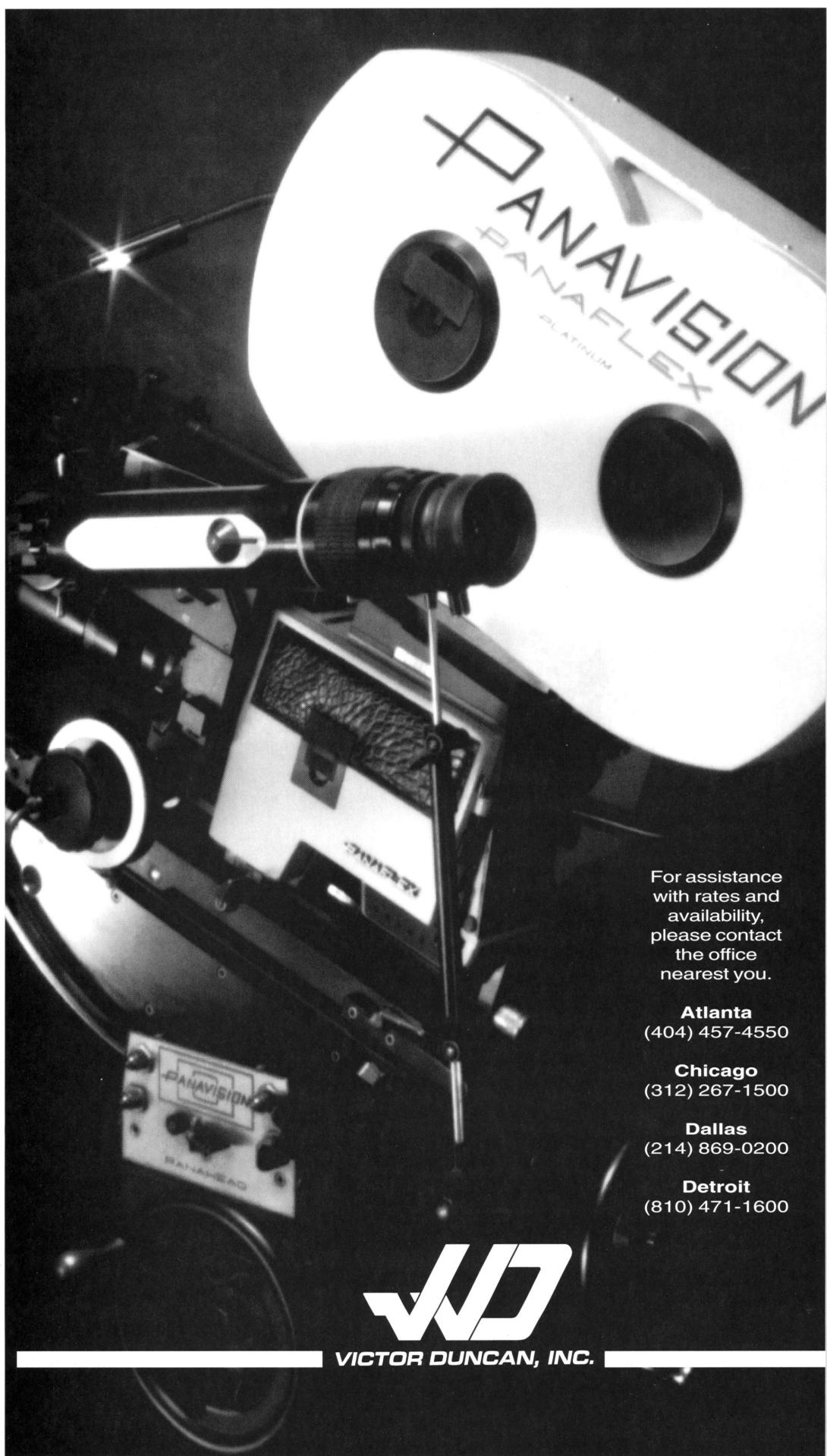
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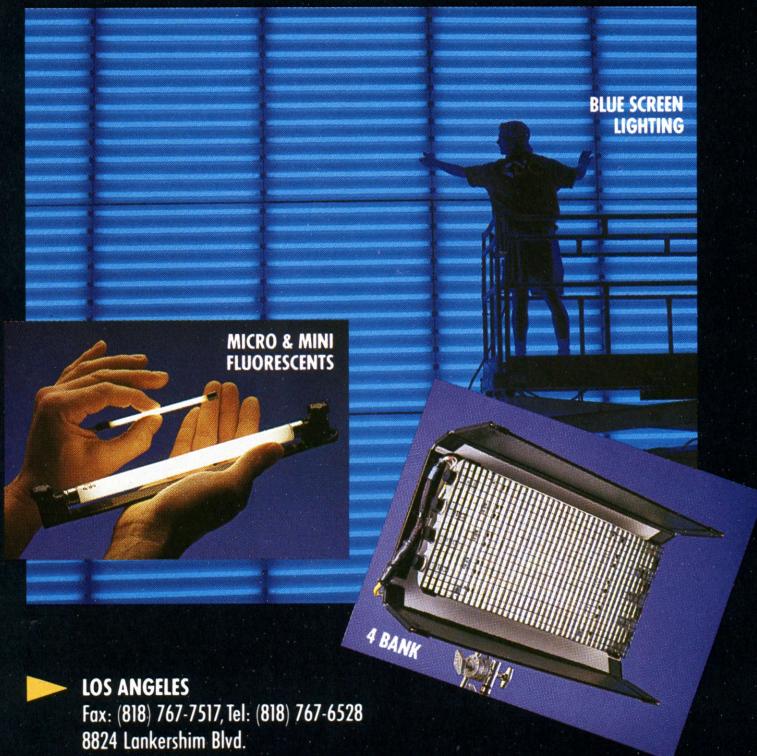


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An Ikegami spokesman conceded that the CamCutter is power-hungry, but said the company is hopeful that production models of the portable will be more compact in size. He also added that the prototype models shown at NAB are more bulky than the finished versions will be.

Nagra Debuts "Flash" Recording

Talk to motion picture sound recordists and you will hear the same question asked over and over: Is it smart to invest now in expensive professional DAT recording equipment when the technology is in such a state of rapid change? Well... maybe not.

Nagra gave sound recordists a glimpse of the future at NAB '95 when it demonstrated its first solid-state tape recorder. Called the Nagra ARES-C, this new 16-bit portable is aimed (at least for now) at radio reporters. The recorder uses the G722 or MPEG Layer II compression which offers a frequency response of 30 Hz to 7 kHz (-3 dB). Dynamic range is 46 dB for 0 dB record level (manual) and 30 dB for 0 dB record level with ALC.

The ARES-C uses credit card-sized PCMCIA cards as storage media, records in mono or stereo, includes on-board editing functions and includes outputs for ISDN, standard phone lines and AES/EBU equipment.

Depending on battery configuration, the recorder can operate from 2.5 to eight hours. One 20 MB card gives 40 minutes of mono recording time, and a 64 MB card has the capacity for nearly two hours.

Nagra says the new 6.4-pound recorder is designed with technological evolution in mind, meaning its performance can be upgraded as compression technology improves. Without hardware modification, it can use hard-disk, flash-system-type PCMCIA cards, MPEG Layer II compression and on-board ISDN circuitry.

Flash-recording technology currently has no time code capability and is not ready for film sound applications... yet. But Nagra said that these capabilities are coming soon — very soon. 

KAUAI



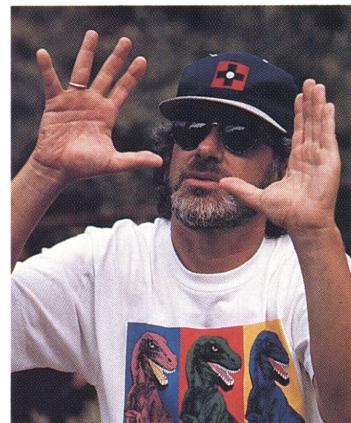
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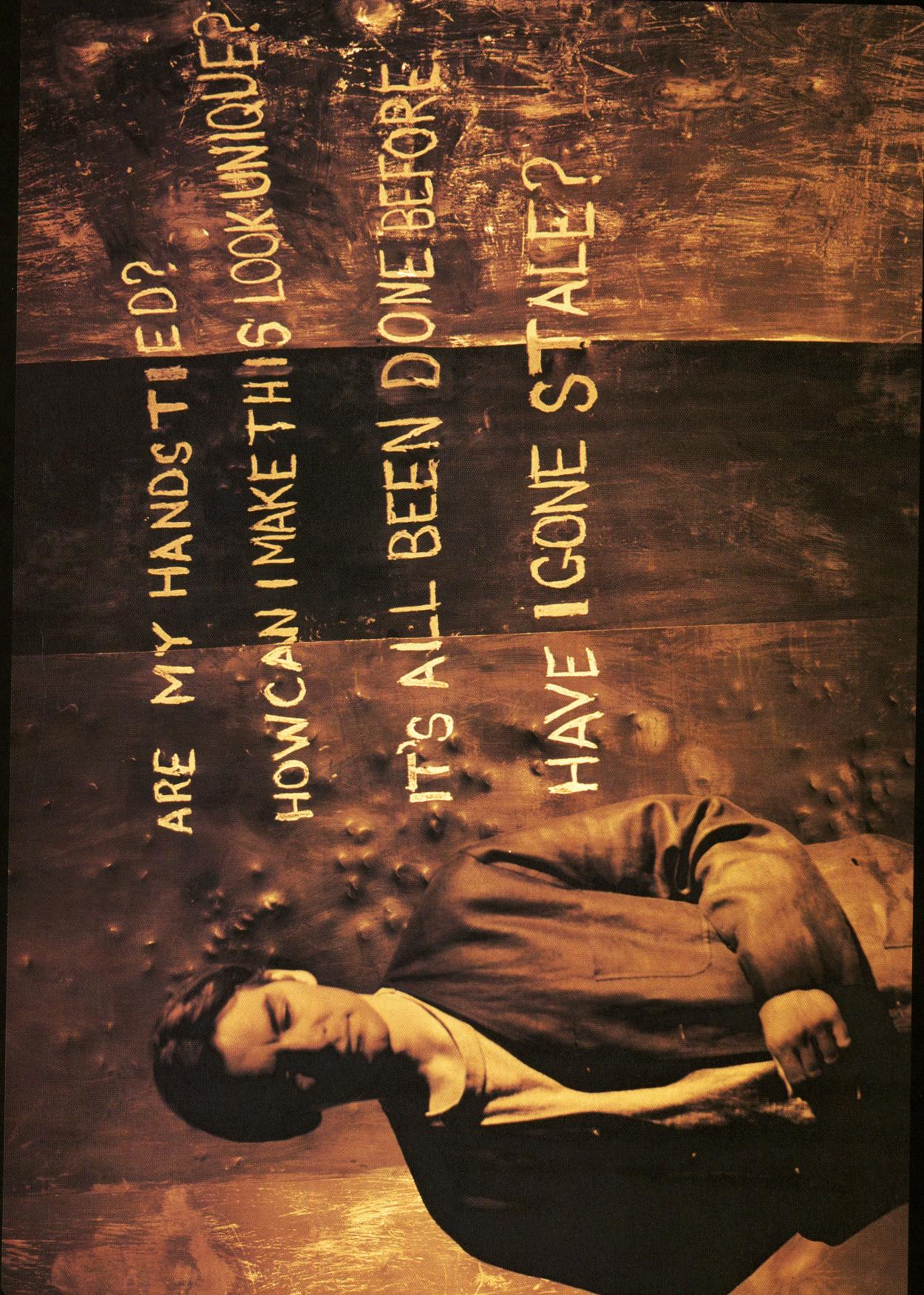


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Peeking Through Crumb's Keyhole

Award-winning documentary takes intimate, unflinching look at the source of underground artist R. Crumb's obsessive creativity.

by Chris Pizzello

When San Francisco documentarian Terry Zwigoff decided 10 years ago to train a camera on underground artist and longtime friend Robert Crumb, his goal was simple — to make a film as frank and unflinching as the vivid visions of his cynical subject.

"In one of his latest comic books Crumb describes what he aspires to do in his work, which is to make art which is the equivalent of peeking through a keyhole," Zwigoff explains. "That's exactly what I was trying to do with this film."

Understandably, Zwigoff was surprised when Crumb recently told his old friend that he hated the film, which was six years in the making.

"He was obviously disgruntled about the whole thing," Zwigoff relates during a frantic day of media interviews two weeks before *Crumb*'s opening in theaters. "Part of it, I think, is that the film has a distributor and is going to be seen. He never expected that, and I certainly didn't either. He would have been much happier if the film had been more of an underground event, in the same way that he likes to keep his own work very much out of the mainstream."

The cantankerous cartoonist went so far as to describe the making of *Crumb* in a caustic comic strip, in which Zwigoff is portrayed as an all-powerful puppetmaster dangling pint-sized versions of Crumb and his wife Aline on marionette strings while commanding them, "Go ahead, do your shtick."

"Ultimately, the truth of the situation seemed to be that he likes to control the way his honest, frank portrayal of himself is done, through his own work," Zwigoff shrugs. "To a point he is very honest, but everybody [has their lim-

its]. My biggest fear was that he would think I had made a really lame piece of art, to which he said, 'No, no, it's a very good film, of course.' But at the same time, he doesn't like it!"

In the film, Zwigoff interweaves commentary from the artist, family members, critics, fellow artists and ex-girlfriends with extensive footage of Crumb's trenchant drawings to create an alternately hilarious and disturbing

passion for early jazz and blues recordings, and they later teamed up as bandmates in an outfit called the Cheap Suit Serenaders. The first seeds of the idea to make a documentary on his friend were planted during a road trip in 1974, as Zwigoff and Crumb headed to New York after hunting for old records in the South.

"I was tired of driving," Zwigoff recalls. "We were outside of Philadelphia and Crumb said, 'My parents live near here, if you want to spend the night at their house. I should really see them, I haven't seen them in five years.' I said OK, and I met his father and mother, and his brother Charles. But I didn't immediately think, 'Oh, I've got to make a documentary about this family.'"

Years later, after Zwigoff had finished his first film, *Louie Bluie*, in 1985, he began to think that Crumb's life and career as a perpetual outsider could make for an interesting film, provided that Crumb's reclusive family would agree to be involved. Predictably, the media-shy Crumb was cool to the idea. Zwigoff told him that if Crumb's mother and brother refused to participate, he would drop the whole notion.

"For some reason, I had hit it off with his family that night in the early Seventies," Zwigoff recalls. "I don't hit it off with too many people, but I had liked his family immediately and felt that the feeling was mutual. Being very reclusive people, they remembered me, and they said okay. Crumb just sort of got roped into it that way. I don't think he felt they were going to agree to it. He just went along reluctantly, and was very passive-aggressive through the whole project, just as one of his ex-girlfriends describes him in the film."

On the recommendation



© 1991 Robert Crumb, used by permission of Kitchen Sink Press, Inc.

film about the iconoclastic artist and the deep-seated obsessions that drive him. What initially began as a simple portrait eventually took on larger themes of family, sexuality and the courage it takes to present an individual vision to the world, as well as the risks of doing so.

"I was aware from the start that I would be open to criticism for trying to make an objective documentary about a friend of mine," Zwigoff says. "I kept thinking, 'I've gotta be harder on him than if I didn't know him.' I think possibly I was, but ultimately I don't think this film is that much about Robert Crumb. It's more about what it's like to be different and not to fit in."

Zwigoff met Crumb in San Francisco in the early 1970s when he asked the artist to contribute to an animal rights comic book he was publishing. Although Crumb initially ridiculed his idea, the two soon found they shared a

of editor Melody London, New York-based cinematographer Maryse Alberti was hired by Zwiegoff to serve as director of photography. A veteran documentary cinematographer, Alberti's credits include *H2 Worker* (for which she won the Best Cinematography Award at the 1990 Sundance Film Festival), the Michael Apted documentaries *Incident at Oglala* and *Moving the Mountain*, and a cinematography co-credit on *Paris is Burning*. Her feature credits include the Todd Haynes-directed *Poison* and Anthony Drazan's *Zebrahead*.

Zwigoff cites Alberti's subtle, people-friendly approach as

"Fritz the Cat" and the endlessly reproduced "Keep on Truckin'" illustration. Her initially amused reaction to the frail, bespectacled, fedora-clad Crumb eventually gave way to huge admiration for the relentlessly prolific artist.

Upon first meeting him, she thought of Crumb as "a charming weirdo. I mean, look at him! But I liked him and I think he sensed that, which is why he trusted us. As a woman, I could be offended by some of his drawings [of

Photo by Rita Benton, courtesy of Sony Pictures Classics



Opposite: One of R. Crumb's most famous creations, Mr. Natural. This page: Director Terry Zwiegoff (left in photo) and Crumb are close friends, but the artist's misgivings about committing his life history to film are comically conveyed in a sketch he created for cinematographer Maryse Alberti.



a key to the production, particularly during delicate interview scenes set in Crumb's boyhood home in Philadelphia, where his older brother Charles still lived with their mother Beatrice at the time of filming.

"I'd worked with other documentary crews before and they always seem to be lugging heavy stuff and banging it around," he says. "They have tool belts and all of these keys jangling. I've worked with guys who, in trying to get a close-up, will just pick up the camera and set up [right in front of the subject]. But Maryse is very quiet and moves very slowly. There was never any footage that we couldn't use, which was absolutely essential for those scenes in the house, because it was an almost 1:1 shooting ratio in those rooms. We shot as much time as we had. She was very unobtrusive."

The French-born Alberti admits that upon getting the assignment, she was only familiar with Crumb's most famous creations, such as "Mr. Natural,"

women,] but he's an incredible artist, and we should be careful about censoring art for the sake of political correctness. What I really liked about him is that he draws all the time. I have a little camera that I carry with me all the time, so when I see someone like Crumb, I can relate to that kind of passion."

Alberti's ability to blend into her surroundings while shooting quickly and efficiently was put to good use in the scenes in Philadelphia. For an interview featuring both Crumb and his brother Charles, Alberti used only a Tweenie with some opal gel in a corner of the room to simulate light from the window of Charles' bedroom, and changed a bulb in a practical lamp next to Robert.

Part of the reason for the spartan lighting scheme was the filmmakers' fear that they would be thrown out at any moment by Crumb's mother, who was clearly not in the mood to be filmed that day. During the scene in Charles' bedroom, Beatrice Crumb's voice can be heard on the soundtrack

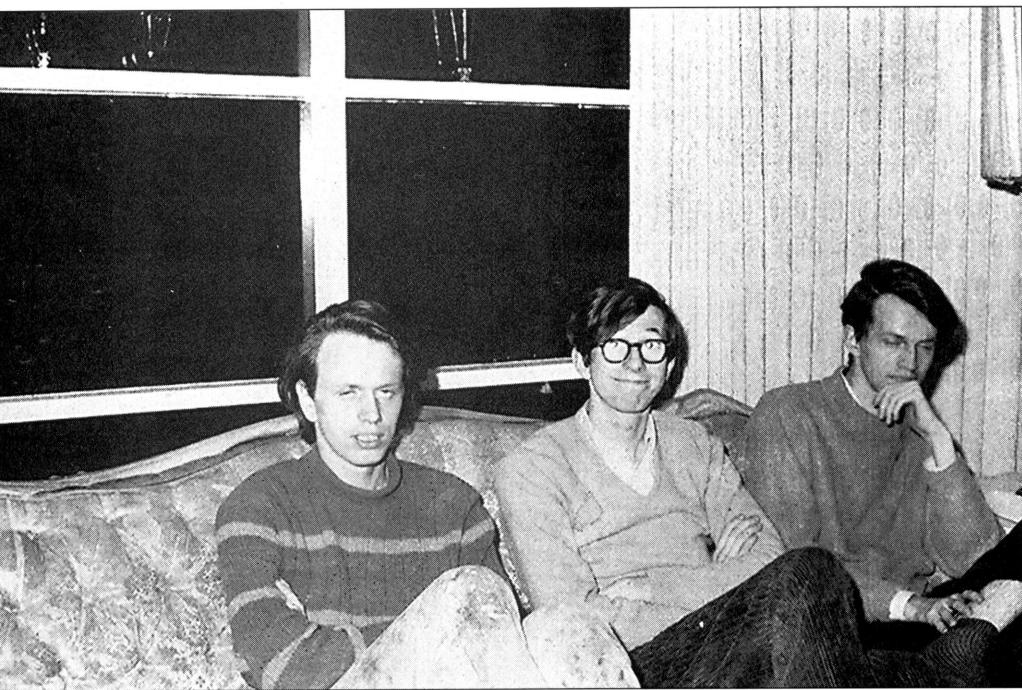
hollering for Charles to halt the interview and fix a faulty window in the house.

Alberti points out that a more complex lighting setup would also have been counterproductive to her goal of capturing the uniquely cloistered atmosphere within the walls of the Crumb home. "When we went into the

house, the smell in there was very strong, because they never opened any doors or windows, and cats lived there," she describes. "So how do you keep that feeling of oppression? You don't put a backlight or a hairlight on someone. The simple lighting worked. I had no time because I had no idea if we were going to be thrown out, but I think the lighting conveyed that sense of stuffiness and oppression."

Zwigoff implies that the interview almost served as a kind of therapy for Charles, an exceptionally talented artist in his own right who spiraled into mental illness as a young man and never moved out of his mother's home. He committed suicide a year after being interviewed for *Crumb*.

"I got the feeling that Charles was starved for attention," Zwiegoff says about the interview. "Certainly his intellect was starved for some sort of stimulation. On a certain level he really loved the fact that we were in there talking to him, and were interested in what he had to say. He was sort of living in an isolation chamber most of the time. He was nervous during the interview, though. He'd say, 'Oh, this medication I'm on, I'm sweating, are we almost done?' It was very touchy stuff, and I didn't want to betray the trust he put in me."



Above: A troubled but gifted trio: the youthful Crumb brothers (from left: Maxon, Robert and Charles) in repose at their family home. Right: In a more recent photo, Robert (right) and Maxon (center) pose with Robert's son, Jesse.

In one of the film's most illuminating passages, Robert displays drawings he and his brother created as children for a correspondence art contest. Robert's drawings played by the rules and earned kudos, while Charles' dazzling but supremely subversive sketches were roundly rejected by the man sent to inspect their entries.

"That's one of my favorite scenes in the film," Zwigoff smiles. "It really shows why Charles is a great artist. I think Charles was the best artist of the three brothers (Maxon being the third), but he just wasn't willing to compromise, which is part of the reason why he failed. I had to discover the art tests on my own when I was in Crumb's house one night. I was digging through his drawers looking for something else and I found them. The next day I showed them to Crumb and said, 'Why didn't you show me this? I'm making a film about you and your brother and your art. This is absolutely crucial to the film!' Crumb just said, 'Aaaaah, I don't know what you need.' Very cooperative!"

The filmmakers scored a real coup during the session with Charles when Alberti's husband, Scott Breindel, who served as sound recordist and gaffer for the film, headed downstairs to chat with Beatrice Crumb. Minutes

later, he returned with the news that she had agreed to be filmed downstairs. "I have no idea what he said to this woman," laughs Alberti. "He charmed her. I could not; she was too much for me."

For the interview session with Beatrice, Charles and Robert Crumb, Alberti hastily set up one 1,000-watt open-face light bouncing onto a white card next to the camera. "As soon as Maryse put the light up, Beatrice started getting really angry, screaming at us and swearing," recalls Zwigoff. "It was very uncomfortable, so I said, 'OK, let's take it down, sorry.' And Maryse said, 'No, let's do it!' And as soon as she turned that camera on his mother, she was like, 'Oh, it's too late now. I'm in the movies!' And she was in a happy mood thereafter."

Alberti and Zwigoff had considerably more time and control while shooting scenes at Crumb's studio, where the artist demonstrated and explained samples of his work. "Crumb's studio was on the ground floor of his house, which meant that we could



Photo by Scott Breindel, courtesy of Sony Pictures Classics

put up lights aimed through the windows from outside," Alberti says. "If he'd been on the third floor, the film wouldn't look the way it does, because on documentaries I don't carry around any scaffolding. When I first went in there, I said to myself, 'This is a painter's studio, so let's make it look like the classical idea of the painter's studio, with the ray of warm sunlight.' I created that look with a couple of 1,000-watt open-face lights with 1/4 CTO aimed through the windows, and adding a couple of tweeneries inside for key light. On documentaries, the look is often dictated by access and time, and in Crumb's studio, we had both."

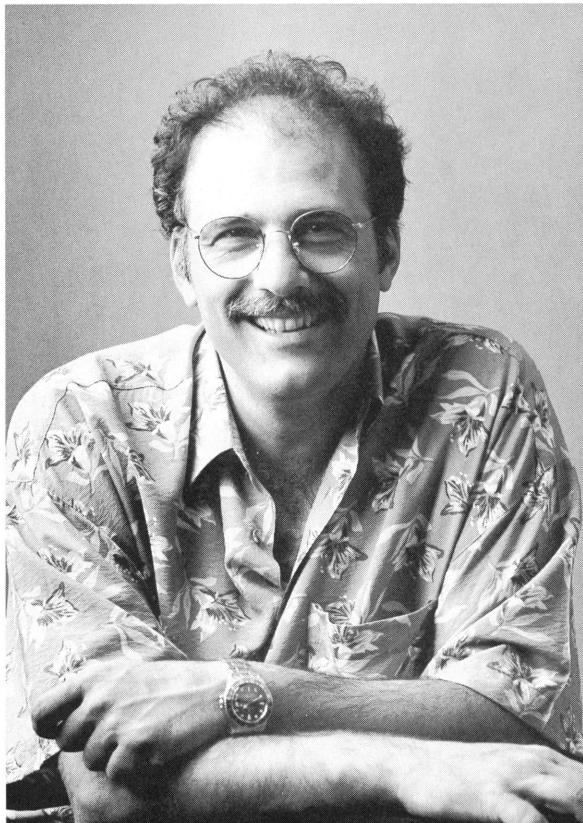
"When we were in his home, the atmosphere was really nice and warm, like a regular family home, and I wanted to keep that feeling. We used a Chinese lantern

with an inky bare bulb above the dining-room table and in the living room. We also changed a couple of practical bulbs and placed them on small dimmers. It was very, very simple. One thing you definitely learn from shooting documentaries is that with lighting, less is better."

Since Alberti carries a small lighting package on documentary shoots (three 1,000-watt open-face lights, two tweeneries and one inkie, as well as a few flags), she had to be especially resourceful during the frugal shoot. A fine example of her selectivity is the film's eloquent opening shot, which introduces the viewer to Crumb's singular sensibility by slowly panning over a variety of curious possessions in his moodily lit studio. According to Alberti, that shot was one of the easiest to achieve. "I used only one soft toplight, a tweenie with some gridcloth," she

“The Clairmonts have a good system and big ears,” says Director of Photography Angelo Pacifici

Angelo Pacifici has been a DP since 1989, making commercials for Coca Cola, American Airlines, Pacific Bell, Acura, Infiniti, Budweiser, Kodak, DisneyLand, Heineken, Minolta, Spain Tourism, General Motors, Lincoln Mercury, Marshall Fields, The National Guard and others. He was DP on the feature California Myth and he has shot numerous rock videos.



“The Assistants I work with are much happier when they get to prep at Clairmont,” says Angelo Pacifici. “They tell me things pretty much go like clock-work over there.”

Systematic

“They go in, the equipment’s ready, they deal with one person, they get answers. They get what they need, everything works, they get out again.”

Wild Knob

“Shooting spots, I often put together oddball packages. But at Clairmont I’m confident I’ll get whatever’s on my list—even if sometimes it isn’t on *their* list. A wild control knob for the Speed-Aperture Computer, for example.”

“The day before that shoot, the client and agency were still making changes. Actors would be moving in and out of frame at different speeds. I suggested ramping the Speed-Aperture Computer up and down at will. Not to programmed settings, but on the fly.”

Overnight

“While the prep was going on, I called Alan Albert to ask whether a wild control like that existed for the S.A.C. It didn’t; but he had Clairmont build one for me, literally overnight. They delivered it to us next morning, on the set in Long Beach.”

Unsung Heroes

“The Clairmonts have big ears when it comes to what people need,” says Mr. Pacifici. “I can call Jim Meade for a piece of custom gear and I know it’ll be designed intelligently. It’ll also work smoothly and even *look* great. Guys like Alan and Jim are the unsung heroes of this business.”

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says. "We didn't have a dolly, and Crumb's son was around, so we put the camera on his skateboard. We hooked the camera up on the skateboard and locked it off with bungee cord. Then we built a little platform from a bunch of cases, put a piece of plywood at the level of all of these objects, and rolled the camera by very slowly. We did it at a couple of different speeds to get different looks."

Since Zwigoff intended from the outset to include an extensive number of Crumb's drawings in the film, he was tempted to try out innovative approaches in shooting the material. "One of the things I asked [The Simpsons creator] Matt Groening, one of the investors in the film, was whether I should get celebrities to read the different voices of the characters in Crumb's work, like getting Dustin Hoffman to be Mr. Natural," Zwigoff remarks. "He said it would never work, and told me not to waste my time. Crumb probably would have hated it, too. His work is personal to me, and I couldn't see imposing these other voices on it. Those scenes seemed to work best with Crumb just matter-of-factly pointing his way through the drawings. I was continually pushed to do more gimmicky stuff, like animation or an MTV-style, up-tempo approach, but I never saw Crumb's work as being particularly playful. His work is very powerful, and doing those other things would seem to penalize it."

Some of Crumb's sketches were shot on an optical printer in San Francisco, while others were shot handheld by Alberti in the context of a scene. In the latter cases, Alberti would position herself over Crumb's shoulder as he turned the pages of a book. "The most difficult part was keeping those small cartoons in focus," Alberti comments. "Also, if you move the page at an angle of even a half-inch, you can get glare. It's always hard to film photographs or artwork. If he was showing his artwork at his desk, it was lit with the bulb from the lamp above his desk. That way, I could tilt up the camera and go to his eye or his face for reaction. Whenever the artwork was shot like this, it was lit with

the same light I was using for the entire scene."

Alberti is proudest of the film's most spontaneous scenes, which allowed her to anticipate and react to her subjects' fleeting gestures and mannerisms. In one scene between Crumb and a still-smarting ex-girlfriend, Alberti's camera continually swoops down to capture the pair's nervous gesticulations, which act as a subtle counterpoint to the substance of their conversation.

"In documentaries, you react emotionally, whereas features are more of an intellectual venture," Alberti remarks. "In that scene, I knew the guy, I was five feet away from them, and I could tell that she was upset even though she was laughing. I was feeling both her vibe and his. You have to shoot with one eye while leaving the other open to notice what else is going on."

Alberti uses this skill to perceptive effect in a scene featuring Crumb's troubled younger brother, Max, in the latter's San Francisco apartment. As Max excitedly describes an attractive Chinese woman he once accosted in a drugstore, Alberti suddenly pans the camera down and catches his compulsively shaking hand, capturing his frenzied emotional state.

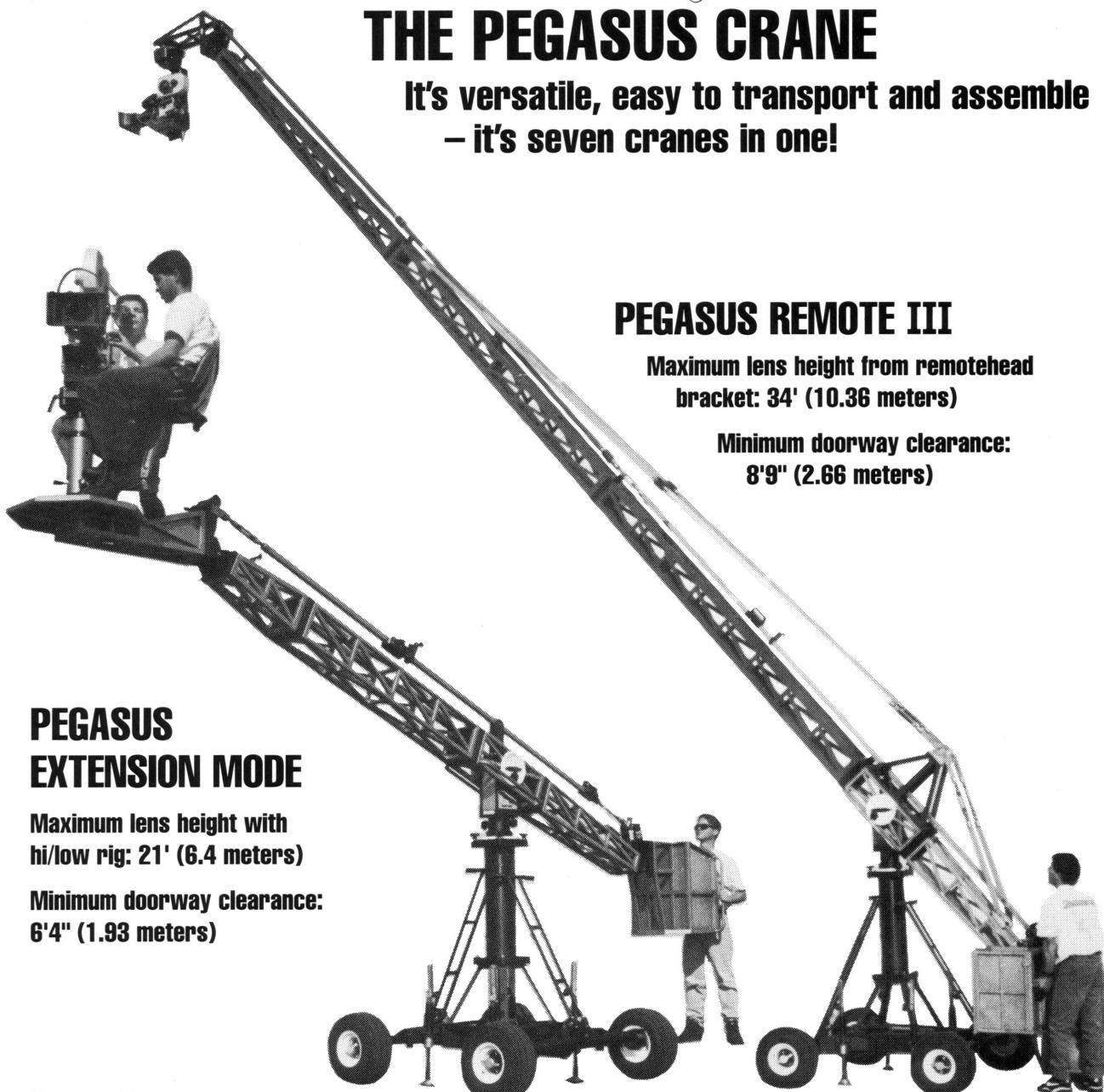
Zwigoff comments that many documentary cinematographers forget all too easily that a keen ear is just as important as a sharp eye. "Maryse is unlike many cinematographers who like to say they listen to what's going on, but really don't," he says. "Even if they do listen, they might not pick up on the same things that are important to the action. Maryse is very sensitive to what's going on in a room. If two people are talking, she knows to stay on the key person, even if the other person is talking."

For one sequence in the film, Zwigoff broke with a strict purist's definition of a documentary, asking Crumb to walk around downtown San Francisco with his ever-present sketchbook. The resulting sequence captures a larger truth about Crumb's alienation from contemporary American society. In one striking image, an obnoxiously cheerful face on an advertising billboard looms behind

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the introverted artist as he hunches over his sketchbook at a bus stop.

"Most documentarians would have my head for this," Zwigoff admits. "I was looking for some image that would form a discrepancy between him and his drawing and the real world. I actually found an advertisement much better than the one that was used in the film. It was a really unbelievable bus stop billboard about men's baldness that showed a bald guy and said, 'Men, do you want to be a loser all your life? Get with it! Chicks will dig you if you do this . . .' It was really over the top! I went back two days later with a crew, but it had already been taken down. The happy face was my second choice, so we went there."

Zwigoff rejects the notion of objectivity in a documentary, especially considering the fact that Crumb is a personal friend. "I don't think I ever thought [making an objective film] was possible," he remarks. "I don't think it's possible to make an objective documentary about anything, although some people think they can — Frederick Wiseman is a good case in point. Andy Warhol's really the only guy who ever made an objective documentary, when he made his Empire State Building film! There's just an incredible amount of manipulation that goes on both in the editing room and before the editing room, without it even being conscious. There are so many choices to make every second."

During the outdoor scenes in San Francisco, Alberti kept on the lookout for "Crumb-like" city scenes that could act as a realistic representation of his drawings. She eventually framed a series of downbeat portraits of the more destitute sidewalk denizens. "[Those people] are who Crumb draws," she explains. "They are the inspiration for his artwork; you can see the props, the jackets, the hats, the funny-looking people. That's also where he gets the substance of his comics, from the streets and cafés. In the shot with the happy face looking over him, the ideal beauty from a magazine is right above him, while Crumb's idea of beauty is very different. He draws women with big legs and big butts

— he challenges the very idea of beauty."

While Alberti and Zwigoff both agree that Crumb was initially uncomfortable on camera, the closeness of the crew helped lower his defenses. "In documentaries you have to find those two or three people who will assume the role of 10 people," Alberti says. "My husband Scott and I are a team in life and in work. He is like my third eye. We've also worked with my assistant, Joe Arcidicono, on quite a few projects. Joe serves as both my assistant cameraman and my key grip. Crumb just got to like us after a few days. I don't know if he was ever comfortable on camera, but he was trusting enough to let us film."

Alberti used her own Aaton LTR-54 camera throughout the production, along with Angenieux 9.5-57mm and 12-120mm zoom lenses. "The Aaton is designed to be handheld," she comments. "It's round and has curves, just like your body. Since I'm not the biggest person, it's the perfect handheld camera for me."

Alberti shot Crumb with 7296 and 7248 film, while DuArt in New York supervised the blow-up from regular 16mm. "DuArt did a great blowup," she says. "If you provide them with a good negative, and if you don't make too many mistakes with underexposure or overexposure, you get a really good result."

The filmmaker's efforts were duly rewarded at the Sundance Film Festival, where *Crumb* won the Grand Jury Prize and Alberti earned the nod for Best Cinematography. But despite these garlands and almost universal critical plaudits, *Crumb*, like *Hoop Dreams*, did not receive an Academy Award nomination, contributing to recent criticisms about the Academy's selection process for documentaries.

Alberti credits the artistic success of the film to the fact that Zwigoff remained open to surprises during the production, rather than remaining fixed to a preconceived notion of what the film was about. "The reason the film works is that it was a process of discovery and collaboration," the cinematographer maintains. "This is what a lot of documentary

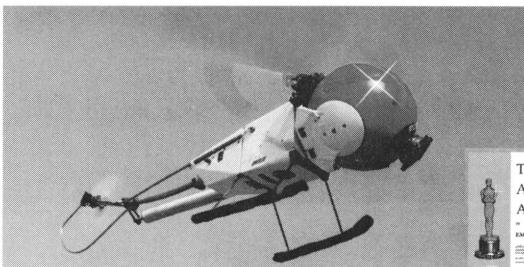
films have lost. I sometimes shoot for the television networks, where a lot of people go and research a film, then write the script that outlines in advance everything they want to say. Then the cinematographer is supposed to go and find the pictures to illustrate what they've decided the film is about. You end up making films that are not really films. They're not cinematic, they're more like journalistic essays. With *Crumb*, we just went in and didn't really know what we were going to find, which is why the film is strong. This approach is difficult, because it involves a commitment of several months or years instead of three weeks."

Despite the complex and sometimes disturbing overtones of the film, *Crumb* is perhaps most successful on a more basic level—in supporting Zwigoff's long-held belief that Crumb is one of America's greatest artists. The director describes an afternoon in San Francisco, long before the making of *Crumb*, when he realized the true definition of visual genius.

"Crumb was staying at my house, and when I came home from work one day he had gotten locked out and was sitting on my front stairs," Zwigoff recalls. "As always, he had his sketchbook with him, and to pass the time before I got home, he had started a drawing of a house that was across the street and slightly up the hill from where I live. I just glanced at this drawing as I was opening the door, and I never saw that corner or that house the same way again."

"What he'd done was nothing all that extreme. There are all these overhead electrical and telephone wires that you normally see on any corner in America, and in this drawing he had slightly exaggerated the number and size of the ones on this corner. I had never seen these wires before—they'd been completely invisible to me all the years I'd looked out my window. Now, ever since that day, whenever I look out my window, that's all I see, and I say to myself, 'God, those wires are ugly. Why don't they take them down? It ruins the view!' Although I don't think I'm necessarily a happier person for it, he's actually changed the way I see the world."

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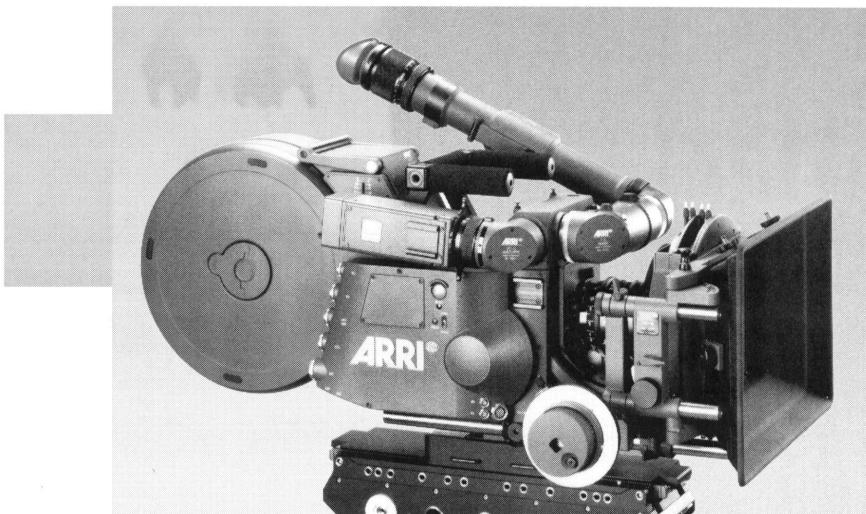
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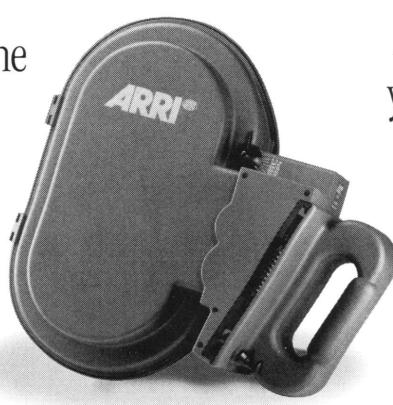
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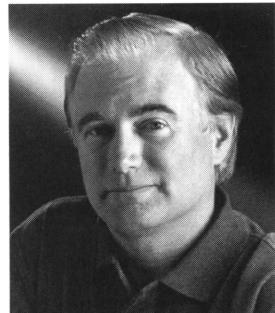


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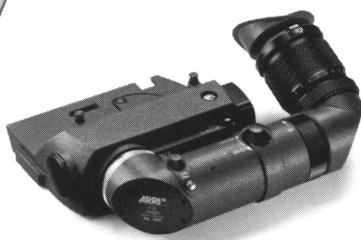


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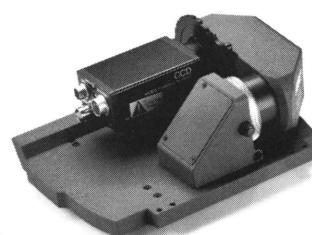
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Batman Forever Mines Comic-Book Origins

Filmmakers probe classic source material to craft a new look for Warner's third big-screen blockbuster about the mythical crimefighter.

by Stephen Pizzello

In the annals of comic-book history, there has never been a character with an appeal as complex and enduring as Batman's. Superman fans will surely react to this heretical statement as their hero would to a shard of Kryptonite, but the Man of Steel, with his bulletproof physique and Dudley Do-Right demeanor, is hopelessly out of touch with today's angst-ridden American zeitgeist. Plagued by a tragic past and riddled with neuroses,

of comic-book variations, two 1940s serials (each with 15 chapters), the ever-popular live-action television series, two animated series, and four motion pictures. The latest silver-screen installment, aptly titled *Batman Forever*, pays homage to the character's mysterious magnetism by revisiting the original source of his allure: the comics themselves.

As Batfans well know, the new film represents a major turning point in the character's screen evolution.

The first theatrical *Batman* (1966) was essentially an extended version of the campy Sixties television series, in which Adam West, Burt Ward and a series of

Photos by Ralph Nelson, courtesy of Warner Bros.

Nicholson a tycoon. Burton and Co. took the obligatory curtain-call with *Batman Returns* (1992, with atmospheric visuals by Stefan Czapsky), but fans began to sense that the director and his cohorts were ready to move on.

That feeling was soon confirmed. Burton declined to direct the third installment, and Keaton announced that he was hanging up his cowl. An overhaul was in order, and Warner Bros. rose to the challenge, tapping an impressive roster of talent. The "baton" was passed to director Joel Schumacher, whose résumé includes a string of crowd-pleasers such as *Flatliners*, *The Lost*



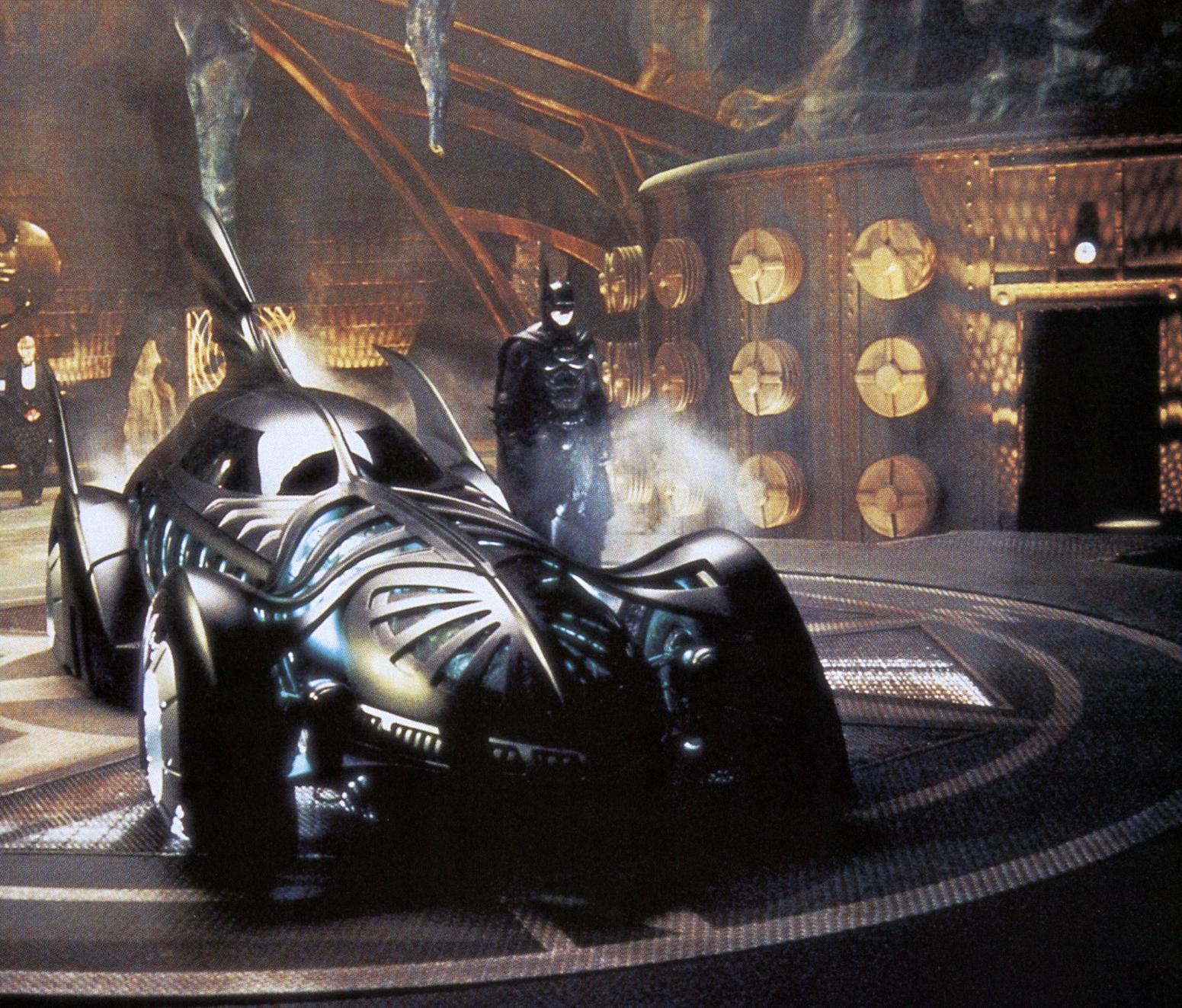
Batman is the perfect pop-culture icon for a society run amok.

When he created the Caped Crusader in 1939, artist Bob Kane couldn't possibly have anticipated that the character would bloom into a cultural touchstone of such titanic proportions. In the years since his birth on the printed page, Batman has become a worldwide sensation, spawning dozens

"guest villains" cheerfully chewed up the cartoonish scenery. In 1989, director Tim Burton took the first serious stab at the character's cinematic reinvention. Burton's brooding, Gothic treatment of the legend (enhanced by Roger Pratt's stunning cinematography) was a sensational box-office phenomenon that made Michael Keaton a household name and Jack



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Rigging**.



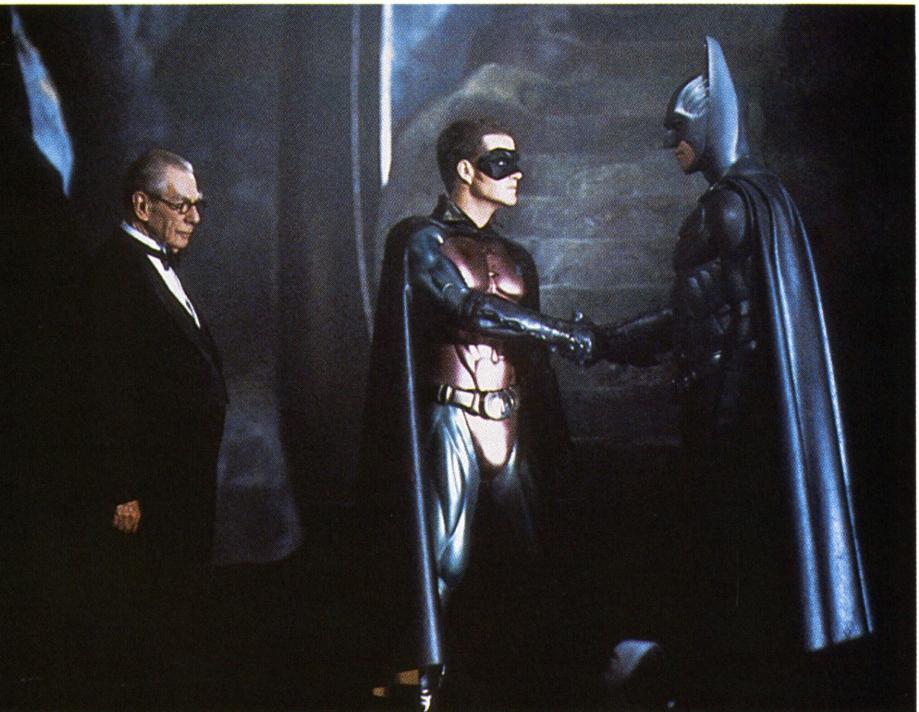
Boys, *St. Elmo's Fire*, *Falling Down* and *The Client*. Schumacher entrusted the visuals to cinematographer Stephen Goldblatt, ASC, an expert imagemaker who also is no stranger to action, adventure and fantasy films (*The Hunger*, *Outland*, *The Cotton Club*, *Joe Versus the Volcano*, *Lethal Weapon 1* and *2*). *Batman Forever* also features a new leading man (Val Kilmer), a new love interest (Nicole Kidman), a pair of formidable villains (Jim Carrey as the Riddler and Tommy Lee Jones as Harvey Dent/Two-Face) and the long-awaited arrival of the crimefighter's sidekick, Robin (Chris O'Donnell).

The latest screen *Batman* repaints the myth in broad, colorful brushstrokes. Director Schumacher explains that he and his collaborators never considered aping Burton's approach. "Even though this is the third in the Warner Bros. *Batman* series, it's our first one, and we were given the license to create our own version," Schumacher says. "If they had asked me to copy the other two movies, I wouldn't have taken the job. Simply imitating Tim Burton, who's a great artist, would have been an insult to Tim, to me, and to the audience."

Of the team's visual strat-

egy, divergent of the one taken by Warren Beatty and Vittorio Storaro for *Dick Tracy*, Schumacher avers, "I didn't even think about going back to watch the other two *Batman* films. Instead, we went straight to the comic books. We read a lot of comics, tore up a lot of comics, and made boards with comics on them. We wanted to create a living comic book, so the color scheme became a very important consideration. One of the great things about comics is the liberal use of color. Comic-book artists take daring license; they do all sorts of wild things, such as making an entire action sequence magenta. With

The spectacular Batcave set was constructed in a Long Beach, CA airplane hangar that once served as home to Howard Hughes' Spruce Goose. Goldblatt used Xenon lights to project shafts of light up through the Batmobile's rotating platform.



Above: Alfred the butler (Michael Gough) watches as the Caped Crusader (Val Kilmer) welcomes his crime-fighting sidekick, Robin (Chris O'Donnell). **Right:** It's double jeopardy for Batman as the nefarious Riddler (Jim Carrey) and Two-Face (Tommy Lee Jones) join forces.

that approach in mind, you can use a variety of colors that you wouldn't ordinarily see; you can have purple street lights if you want. We tried to make Gotham City our own, and Steve Goldblatt's color washes had a lot to do with that."

For Goldblatt, the project represented a welcome chance to let it rip photographically, but even he admits that the film's scale was daunting. "Anybody would be a bit tense tackling a project of this size," he admits. "The first time I was faced with the Batcave, my palms began to sweat. This show was very difficult to deal with from a lighting standpoint. It does help to keep in mind that big is just the same as small — it's the principle of the light that matters."

To ensure a sensible approach to this cinematic Mt. Everest, Warner Bros. allowed the filmmakers a generous budget (estimated to be somewhere between \$70 and \$100 million), preproduction period (16 weeks) and shooting schedule (105 days). Thanks in part to the ample prep time, the production went just two days over schedule, and stayed within the proscribed budget range. During the shoot, Goldblatt and his crew also benefited from the luxury of having both a



Steadicam and a Technocrane on hand at all times. "Booking the Technocrane for the entire shoot was expensive, but it was a really quick way to get beautiful shots," Goldblatt testifies. "Quite often, I used the Technocrane in conjunction with a Chapman Titan. That combination gave us an incredible range of reach — a 50 to 60-foot rise and fall and extension."

During prep, Schumacher, Goldblatt and production designer Barbara Ling had held extensive meetings to solidify their visual approach to the script. Goldblatt notes that while he and Schumacher have somewhat different sensibilities, they found common ground when discussing the film's look. "Joel had his famous scrapbook of things he liked; he's a pop-culture

sponge, and in some ways I'm similar. I'm a pseudo-intellectual and Joel's a self-described populist, but we do like a lot of the same stuff. We had clips of magazine photos, artwork, and of course comics. There were many influences, from MTV to *The Cabinet of Dr. Caligari*, and we used a lot of Dutch angles. Joel wanted me to be as operatic and extreme as possible, and he gave me plenty of rope to hang myself with. But that didn't scare me; I'm more scared of someone saying, 'No, you can't do that.'"

Adds Schumacher, "I discuss every shot and setup with the cinematographer, but I do not make suggestions about lenses and lighting. I'm not one of those directors who tries to tell the cinematographer how to shoot the film. I try to convey what the point of the scene is, in general terms — this should be 'sexy,' this should be 'slam-bang,' and so forth. Then we look through the camera together and discuss the framing."

Explaining the true value of major prep time, Goldblatt says, "It really allowed us to improvise with assurance. We threw out a great deal of what we'd decided upon in prep, but we were always ready in what we were trying to do, which is more than half the battle. Although we often changed things right there on the set, there was usually almost instantaneous agreement about why we were changing it. We didn't stand there for hours mulling things over. Our goal, on the biggest sets we had, was to be shooting by 11 a.m. at the latest. We'd get pretty frustrated if we weren't shooting by 10. That sort of thing involves a lot of people working very late at night, sometimes all night, and on weekends. We didn't have that nightmare feeling of people walking around in porridge, waiting to find out what on earth was going on."

"From the start, I had wanted to use a specific and unusual color palette that was based on my discussions with Joel and Barbara," Goldblatt continues. "I wanted to light everything, as much as possible, from below. I also wanted to light with peculiar colors. Joel saw the film very much as a comic-book opera, so everything could be hyperreal, overstated and very dramatic. In the past, I'd had some experience working with color — Gam Colors and Broadway theatrical colors, which don't react on film as they look to the eyes. They're generally far more vibrant on film, in a narrower spectrum."

In order to ensure that this style would work, the cinematographer conducted extensive tests in New York City, where filming would begin. Schumacher and Goldblatt agreed that executing a few shots of the Batmobile speeding down actual Manhattan streets would serve to flesh out Gotham City, making it seem less like a one-block set that simply repeats endlessly. Although he professes a love for anamorphic, Goldblatt notes that he and Schumacher opted for the 1.85 format on *Batman Forever* (using Panavision's Platinum camera package) to get as much height as possible for the Gotham skyscrapers. Goldblatt says that his lighting setup for the location footage would include "every fixture we could get our hands on." His plan was to use unorthodox color patterns, lots of "inner city" smoke, and moving beams across the buildings. The tests for this setup were expensive, but proved to be well worth the price.

"We did some little tests on the Warner Bros. backlot, which included tests of moving images across buildings. We did tests with projectors, with searchlights, with light up high and down low — all sorts of stuff. Then we went off and did our huge, expensive test in New York. We went to the street we were going to shoot, and we only set up about a third of the lighting we eventually wound up using. We were really looking to see if the setup was even physically practical. We were lighting about



five blocks, but up to 150 feet high. As far as the gel colors were concerned, I was looking at combinations of saffron, a kind of yellow, against another color that worked out very well, a sort of pistachio green. We also used moon blues. We wanted to see if we could get enough stop to use these gels. To the eye, it certainly wasn't enough light, and the meter indicated an error too often to feel comfortable. The colors just weren't behaving in any linear way. But it's cheaper to fail on a test than on the actual principal photography."

Kodak's fast 5298 stock rode to the rescue, however. Aside from scenes involving digital ef-

fects, bluescreen or greenscreen (for which he switched to 5293), Goldblatt shot everything on 98. "There aren't too many daylight exteriors on a Batman movie," he points out with a chuckle. Adopting a more businesslike tone, he warns, "5298 is fantastic film, but you have to be careful, because you can overexpose in the blink of an eye. I never screwed up when I stopped down. And the stock was nice and contrasty and vibrant. When we finally shot the real street footage in New York, it was pretty dramatic. We had every kind of light imaginable — Mini Muscos on the ground, Dino lights to project a huge three-quarter back-

The film's spectacular black-light action sequence required a huge array of Xenon lights (fitted with black-light filters) to illuminate the fluorescent graffiti, costumes and makeups.

light, 20Ks up on 150-foot Condors, Pars and Xenons down low and aimed up at the buildings. We had big statues dressing the streets, and we designed enclosures for some lights so we could actually put them in the shots. I could put a light right where I needed it, and we'd slip a grill or something over it."

Some of the footage was shot in VistaVision to facilitate effects work, such as using matte paintings to extend Gotham's skyscrapers to truly towering heights. Goldblatt used ingenious methods to assure seamless matches. "When you're using remote heads for motion capture, generally speaking, the camera's on a head and it pans left and right and tilts up and down as a digital recorder keeps track of the axes and the movement so you can duplicate it. But the camera is separate from the operator, who's sitting at a black-and-white monitor. I knew we were going to get into situations where we'd need motion capture, but I didn't want the operator sitting at a black-and-white console, because we wouldn't be able to see what we were getting. I wanted to be free, so I decided to put encoders on the actual Panaheads. We modified two Panaheads, and they worked beautifully. We could use them as normal heads, or we could plug them in and use them for motion capture. We also encoded the zoom lens, so that we could have the zoom and all axes of movement encoded on a stationary camera. Lynx Robotics designed the electronics that interfaced with the Panaheads and the Panaflex. It was a snap to do. Basically, the only remote head we used was the Technocrane."

Goldblatt was particularly keen on ensuring that the colors he used in the practical Gotham photography would be duplicated in the miniature work. The effects team used the latest CGI mapping programs to match Goldblatt's live-action colors and textures on the miniatures (see companion piece on the film's effects). "The miniature unit, the CGI unit and the principal unit all worked very closely together," he notes. "In general, however, Joel didn't want to

do anything digitally if it could be done physically. We weren't going to use digital as a crutch. Throughout the film, we went from big digital masters to the oldest tricks in the book."

As an example, Goldblatt cites a rescue sequence that takes place in a cylinder leading to the Riddler's secret hideout. "In that scene, Batman, in full regalia, plummets down the cylinder, which is serrated with beams of light shaped like question marks. We did have to do certain things against blue, but to get the feel of the fall, it was much better to shoot with real wind and a real actor. Using a Panatate, I turned the camera upside-down, and we placed a rolling vertical drum in the background. Inside the drum, we had a mirror beaming Xenons out through cutouts of question marks. Val held onto a metal tube above him, with sparks shooting up from his feet and a fan providing a wind effect. We also did another shot for that sequence with him placed on the end of a Chapman crane with an extension. The camera was upside-down, and we just lifted him past the question marks. It was a simple trick, but it looks just great."

Digital technology did come in handy in other instances, especially for some of the film's larger lighting schemes. To help accomplish several of the elaborate color splashes he envisioned, Goldblatt contracted the services of John Tedesco and his San Francisco-based company, Phoebus Lighting. Tedesco brought to the project his extensive experience lighting rock 'n' roll concerts and theatrical shows. Under Goldblatt's supervision, Tedesco provided diverse, computer-controlled rigs for four setups: a night exterior sequence with an Asian motif that was filmed on Figueroa Street in downtown Los Angeles; a carnival-like "industrial party" shot at the Pantages Theater in Hollywood; the neon-infused interior of the Riddler's Lair, a geodesic dome constructed on Stage 16 at Warner Bros.; and the interior of a circus tent that was also built on a Warner soundstage.

For the Figueroa Street sequence, Tedesco added color satu-

ration to the sides of buildings and programmed scan equipment to project Chinese logos and swirling, serpentine patterns. "All of our stuff is digitally addressed," says Tedesco. "It's on a couple of different types of computers that we use to operate the theatrical lighting."

According to Goldblatt, the rock 'n' roll setups provided invaluable control on enormous sets and also allowed him to pre-light those setups in one day instead of the typical five or six.

The dome-like structure of the Riddler's Lair provided a fine showcase for another unusual rigging strategy. The large set was constructed of 10' X 5' rectangular green plastic panels held together by a skeletal frame of black beams. In the middle of the set, a gold spiral ramp led to a circular platform, topped by the Riddler's plush green Art Deco throne, which was flanked by two giant gold replicas of Rodin's "Thinker" sculpture. Green neon question-mark-shaped fixtures were built into the floor of the set, and six sci-fi-type "energy tubes" added crackling neon brilliance to the background. For the climactic scene in the Lair, Goldblatt and line producer Peter MacGregor-Scott persuaded the production company to incorporate 96 Vari-Lites into the design of the set. The Vari-Lites were deployed at the joins between the dome's beams.

"With green plastic and 96 lamps, combined with the design of the Riddler's platform, we created an extraordinary look," says Goldblatt. "There was a hole in the top of the set, and I used it to add an 'energy bolt' that shone down. To create the bolt, I bounced a 10K Xenon off an angled mirror that redirected the beam down through the hole. We used mirrors this way throughout the shoot, because Xenons tend to go out when they're tipped down. As often as we could, we kept the Xenons burning at a reasonable upward angle — about 30 or 40 degrees — and used mirrors to re-direct the light. At other times we'd shine a Xenon into Mylar and shoot at 96 frames — the Mylar is too fast in its reflections, but at 96 frames it looks really great. We did that for the



scene in which Harvey Dent/Two-Face falls down a huge cylinder, ostensibly to his death."

Goldblatt also used an 8mm Panavision lens to capture shots of the entire Riddler's Lair. "The lens normally creates a very distorted wide-angle look, but because the set itself was a dome, the distortion wasn't so extreme," he notes.

The Riddler's Lair was eventually "destroyed" in a series of pyrotechnic explosions. Even though Goldblatt generally eschews multiple-camera setups ("I like the shots to be specific as possible"), common sense, combined with his experience on the *Lethal Weapon* films, led him to cover the destruction with four cameras set to different speeds — 24, 36, 48, and 96 fps.

To further enhance the look of utter chaos, he commissioned special aerial rigs designed by Earl Wiggins of Wiggins Aerial Rigging and engineered by Colorado's Mathematical Design.

The first was a hanging aluminum camera chair suspended diagonally between cables and powered by pneumatic rams to facilitate high-speed moves. The chair rig was used to execute a power move simulating the destruction of the Riddler's Lair. The second setup was an elaborate suspended spinning rig that allowed the camera and operator to spin around the perimeter of the set (at a rate of 20 revolutions per minute) while descending in corkscrew fashion. The camera was attached to one end of the 30-foot-diameter circular system, which was suspended from an I-beam skat above it.

"The whole thing weighed over a thousand pounds, so we used pneumatic rams to power it up and down," explains Wiggins. "We had an operator, Jeff Roades, on the rig to control the spin by hand, and both he and the camera operator, Ray de la Motte, had to wear burn suits to protect them from the pyrotechnics. It was quite a setup!"

Both Tedesco and Wiggins

were tapped again to work on a circus setup, which featured the high-wire act of the Flying Graysons, a family of acrobats that includes the future Boy Wonder, Dick Grayson. The colorful big top setting featured a circus ring, bleachers, and Bauhaus-style sculptures. The human element included contortionists, clowns, roustabouts and circus attendees clad in tuxedos and ball gowns. All in all, it was a milieu that would have satisfied Fellini himself.

"That setup was extremely difficult," says gaffer Les Kovacs. "Each of the tent panels was about 35 feet at the base, and the whole thing got narrower as you went toward the very top of the set, which was about 80 feet up. The walls were lined with a really thin silk material that you could see right through. We were shooting at it all the time, and Stephen wanted it to glow. The major challenge was the hide the actual point source of the lamps. I found the thickest bleached muslin I could find, sur-

Goldblatt's lighting strategy for Gotham City involved unorthodox color patterns. For this "pan-Asian" sequence, he enlisted the aid of San Francisco's Phoebus Lighting, which used computer-controlled lighting rigs to project saturated colors and Chinese motifs onto the sides of the buildings.

rounded the whole set with it, and then hung my lights on a special pipe rig that the crew built. To reach all the way up to the top of the set, we also used 120-foot Condors. Using the muslin also meant that I had to triple the number of fixtures. We were using far-cyces, which are used for lighting backings. Each unit has four circuits inside, and each lamp generates 1500 watts. All told, we were using about 225 lamps, in a variety of different colors. It was all programmed through a board so we could do color changes and chases."

"The circus was very much a matter of rigging," says Goldblatt. "In addition to hanging the lights, I wanted to get the camera up high, and Earl Wiggins again came through for me. We wanted to place the camera at the apex of the trapeze artist's arc. We put the camera near the ceiling, and the trapeze artist flew right up to the lens and then dropped away vertically."

"We mainly used the camera chair for the circus," recounts Wiggins. "To simulate the POV of Dick Grayson's parents when they fall off the trapeze, we used the chair to drop the cameraman from the center of the big top down to the floor. I also have a camera platform powered by air rams that can

go up, down, sideways or diagonally, but we used it mainly for fixed positions."

Working closely with Tedesco, Goldblatt plotted out a festive look for the big top. Says Tedesco, "The difficult part of lighting the circus was lighting from above the trapeze and getting enough illumination on the floor. We used a lot of programmable equipment up in the air, which gave us lots of color saturation and control. On the floor, the sculptures were individually lit with addressable colors and scans on their faces. When you combined all of this with the wide lenses Steve used, it created a real claustrophobic kind of 'funhouse' look."

Goldblatt used 14mm and 17mm lenses to get the entire circus scenario in frame. To capture the actual trapeze work, he placed different lenses on two other cameras running at 96 fps. "If you shoot at normal speed, it all happens too quickly," he explains.

The cinematographer had originally intended to shoot the trapeze act in black light, but determined that this approach wasn't as effective on film as it appeared to the eye. Instead, he and Schumacher planned out an elaborate black-light fight sequence staged in a narrow alley on

the Warner backlot. "The whole alley was painted with fluorescent graffiti, and all of the wardrobe for the baddies was done in very bright black-light colors," Goldblatt recalls. "I tested and pre-lit, but it was a nightmare to get enough light to make the material fluoresce on film. To get an exposure, we just hauled in more lights. We had 10K, 7K, 4K and 2K Xenons, all fitted out with black-light filters. We had them on cranes, we had them on balconies, we had black-light floods and spotlights — everything that was available. Normally I would never front-light, but with black light you do it till you're blue in the face just to get an exposure. But the lighting isn't coming from the direction so much as the energy — the sheer amount of it. My gaffer, Les, and his best boy, Benny McNulty, really went through hell cabling that setup."

"Yeah, that one really twisted my brain," Kovacs confirms. "I initially thought I could get away with using smaller 400-watt units, but there was just no way. I was really surprised at how much light it took. Xenotech had to fill a monster order; they were sticking black-light lenses into fixtures as fast as they could for us. Ultimately, it worked out great, and the scene looks terrific."

Even more complex was the Batcave itself, an enormous setup that was divided into upper and lower sections. Housed in the Long Beach aircraft hangar that once served as home to Howard Hughes' *Spruce Goose*, the new Batcave is a true triumph of production design, featuring rocklike facades, a network of suspended walkways, an array of sophisticated electronic devices, and a rotating platform for the Batmobile. The cave is first seen in a flashback involving the young Bruce Wayne, who confronts a giant bat in a subterranean chamber. "That scene was done completely in silhouettes, with shadows and light," notes Goldblatt. "We saved the 'reveal' of the bat for later, and for those scenes we used a wonderful mechanical bat created by Rick Baker."

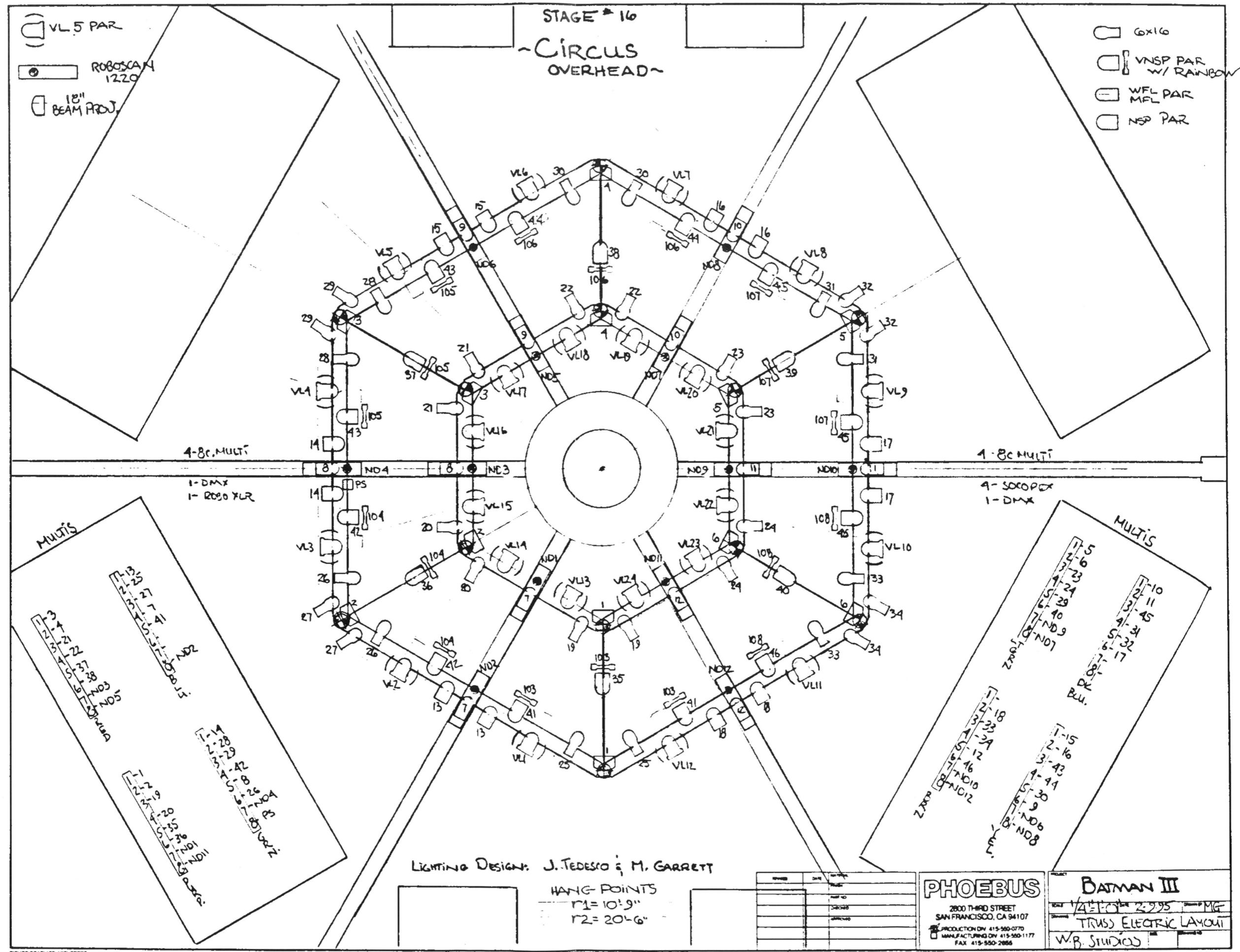
For main scenes in the Batcave, the production crew con-

An array of Xenons help Two-Face stage a deadly threat at the circus.



CIRCUS OVERHEAD

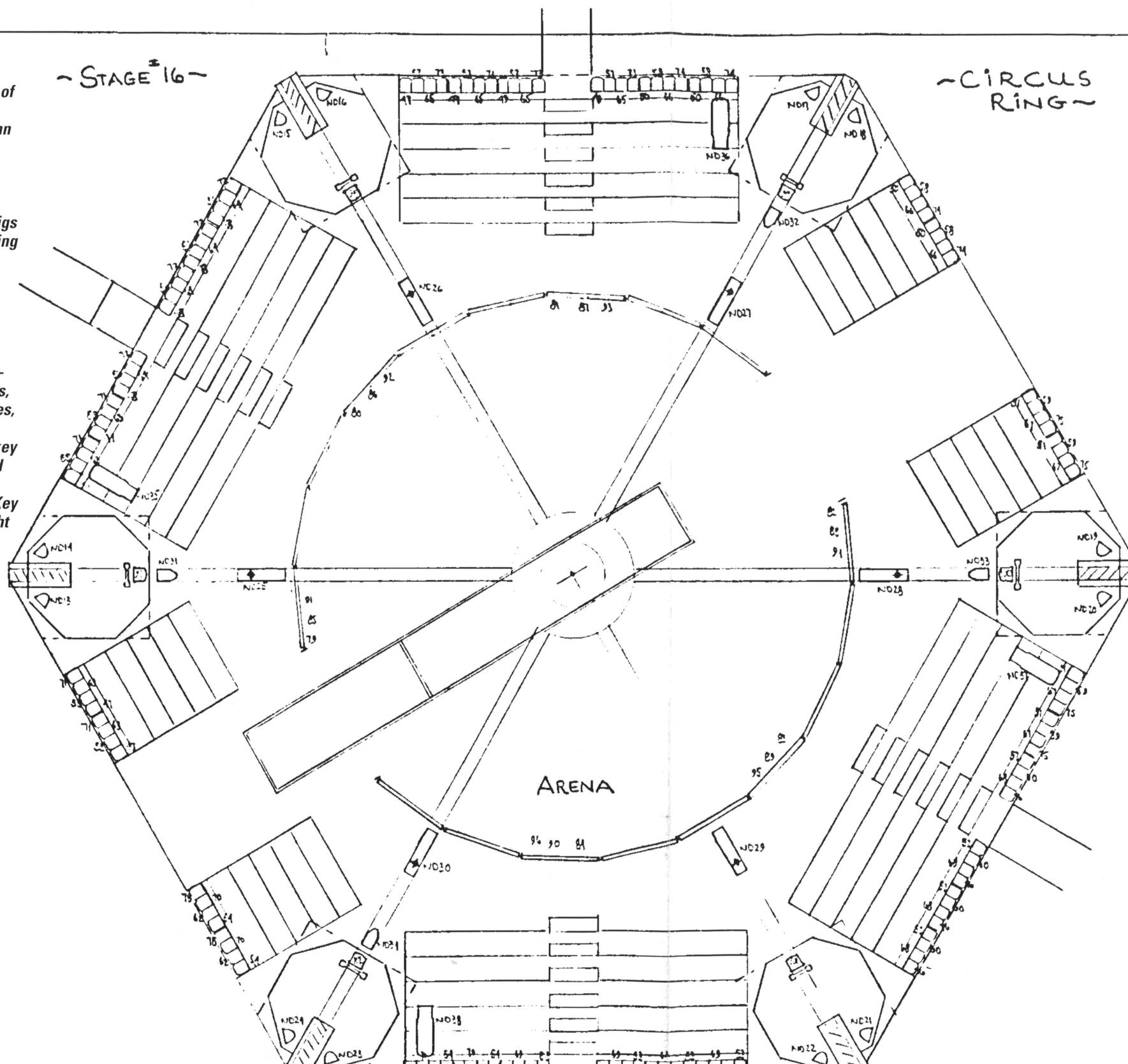
Phoebus also provided an elaborate hanging rig for the circus set. The rig included Vari-Lite 5 Pars, Roboscan 1220s, 18-inch beam projectors, 6x16s, VNSP Pars with rainbows, WFL and MFL Pars, and NSP Pars. Keys in diagram's upper corners explain specific placements.



CIRCUS RING

Under the supervision of cinematographer Stephen Goldblatt, John Tedesco and his crew from San Francisco's Phoebus Lighting created custom, computer-controlled rigs for four setups, including this circus sequence. The floor-level circus ring was lit with a combination of Ultra Arcs, 5K fresnels with color scrollers, three-circuit ministrips, four-circuit Pallas cyclights, ultra-blue metal halides, Super-Scan zooms (which appear in the key as "goldenscans") and 1200 HMI Phoebus universal projectors. Key at diagram's upper right explains specific placements.

~STAGE 16~



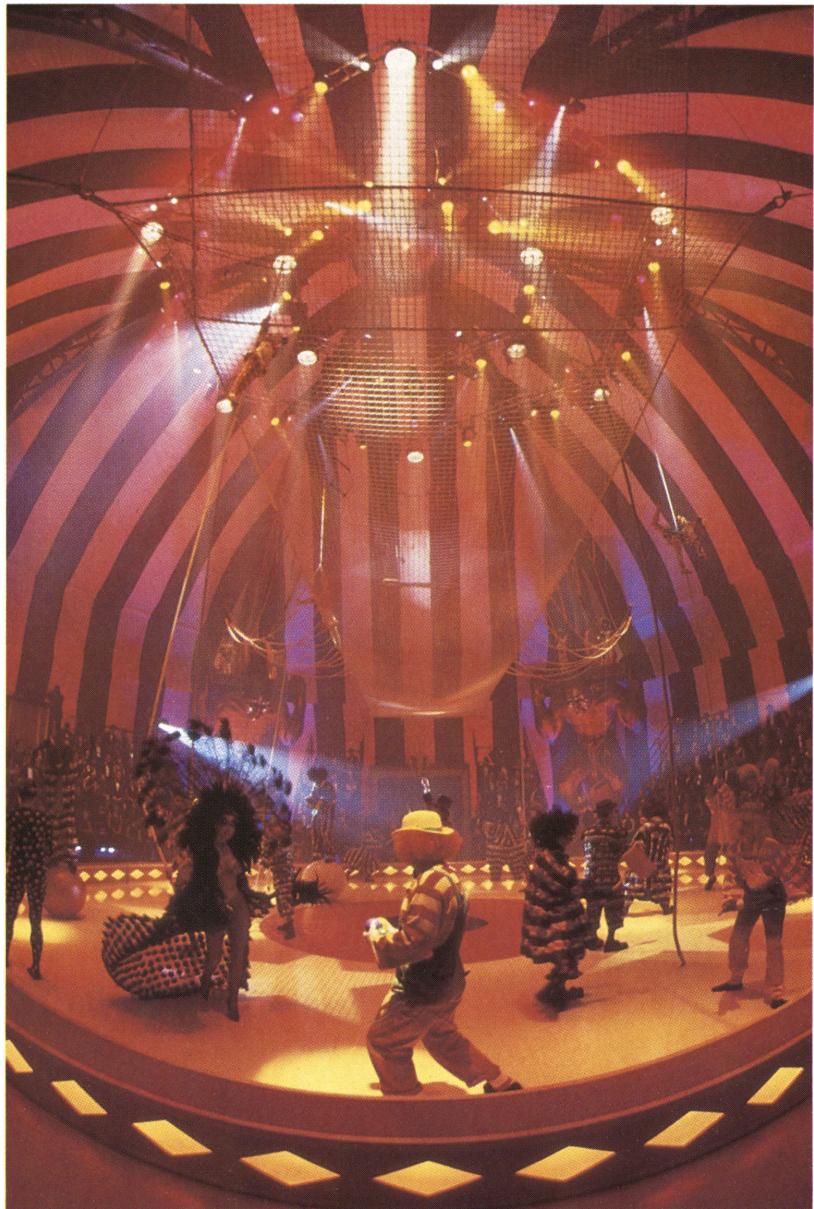
structed a special overhead rig that held 40 10Ks. "The Long Beach hangar is a wonderful space, but it has no facilities for rigging anything," Goldblatt states. "Having built the cave, the crew had to build the structure that would hold the lamps. We had a crane holding the rig at all times. The overhead fixtures were hitting the walls and providing backlight; we used them to pick off bits and pieces and to get a general feel, using half-blue, three-quarter-blue and full-blue CTBs.

"I requested that as many of the criss-crossing walkways as possible should be perforated, so we could get light through them from below; we also drilled holes in the Batmobile's platform so we could shine some Xenons up through it. Generally speaking, because of the spaces we were dealing with, our 'normal' lens on this shoot was a 21mm or 27mm, as opposed to a 40mm or 50mm. We also used the Primo 5:1 zoom a great deal."

Key grip Charlie Saldana says that the overhead rig was a crucial factor in achieving the look Goldblatt wanted for the Batcave. "There was really no way in and no way out, so the grid above the set really helped us. We never would have gotten the lighting we did using the usual methods, because there was no place to put the lamps or diffusion."

Steadicam operator Bob Ulland had his moment in the spotlight for a Batcave sequence in which Bruce Wayne, having decided to retire as Batman, circles the secret hideaway and shuts off all of the power, watt by watt. "We followed Val and Chris O'Donnell 360 degrees around the entire space, for two or three minutes," Goldblatt recalls with an enthusiastic grin. "Bob managed to do that Steadicam shot using the 5:1 Primo zoom, a lens I'd never tried on a Steadicam before. The lights were all rigged into a dimmer board, and in the end, we reached total blackness. We were stopped between 2.8 and 4, which was typical for most of the film. It took four or five hours to set up that shot, but it was a real humdinger."

Earlier in the film, an



Rock 'n' roll rigging provided by Phoebus
Lighting helped Goldblatt create a festive big-top atmosphere for the circus set. (For specific details, see fold-out lighting diagrams between these pages.)

equally impressive continuous "sunset" shot serves to introduce the new Bruce Wayne in his office, as the millionaire businessman is surrounded by a horde of assistants. This shot was achieved using the Technocrane, and as operator Derlin Brynford-Jones recounts, "The shot started down low in a corner, went up over Val Kilmer, came down again to reveal more of the office, and then swung 'round to reveal his assistants entering his office. Stephen had the luxury of planning his shots with the Technocrane in mind, and he really made the most of it. You can use it for a variety of things. For example, you can approximate a tracking

shot without using any track, because it telescopes from 6 feet to 20 feet, at speeds up to 8 feet per second. When you use the Technocrane in conjunction with a Titan, as we occasionally did on this show, you can execute a straight dolly-type move in midair, rather than the arc you'd get with a more traditional crane."

"The shot in Wayne's office goes on for about 2 1/2 minutes without a cut," Goldblatt relates. "I lit it with a 10K Xenon well back, with lots of CTO for the sunset effect — about 1/2 to 3/4, in addition to the normal correction to get rid of the daylight. The Xenon projects a narrow beam, but where it was fall-



The interior of Wayne Tech (above) was lit with a combination of practical hanging fixtures inside the set and 20Ks aimed through the set's windows (right).

ing off we used a 20K to fill it in with the same color. We had also had some smaller lights, rigged to a dimmer, hidden in various spots on the set, such as under the desk, so that people wouldn't be burnt-out when they walked back and forth. I'm very proud of that shot."

The Technocrane move eventually follows Bruce Wayne into the factory area of Wayne Tech, a set which presented its own array of challenges. Built 12 feet off the ground, the structure was 130 feet long. To light it, Goldblatt made use of practical hanging fixtures that lined the entire length of the interior, augmenting the look with a row of approximately 17 20Ks aimed through the windows from outside the set. He continued the sunset look of Wayne's office by adding $\frac{1}{2}$ CTO and a pink salmon gel; for a separate night sequence in Wayne Tech, he fired the lamps through Congo blue gels. Topping it all off was a matte painting of Gotham's industrial area, visible through a circular window at the very end of the set.

"I had hoped to get shafts of light inside, but it didn't work out because of the way the windows were angled; they were a bit too narrow," Goldblatt recalls. "I had the crew glaze the right-hand side of the set, and the left-hand



side we basically left open. I struck an agreement with Joel that we would favor the right side so I wouldn't get into trouble. For reverses, we used five wild windows that could be moved in and out. That made it possible to have the light as a direct effect. We also ran steam and smoke past the windows to get an industrial feel. The night look was for the sequence in which Jim Carrey murders his boss by hurling him out the big window. People couldn't believe that we would get enough light through the Congo blue, but the 98 stock did the trick. I wasn't shooting at 1.4, either; I was between 2.8 and

4. It really looked dim to the eye, but it came out quite well on film."

Goldblatt took a more restrained, "Old English" approach to his lighting for millionaire Bruce Wayne's home, stately Wayne Manor. "The visual style in the mansion was more baronial in quality, with vast shafts of light and huge drapes," he says. For love scenes between Bruce Wayne and Dr. Chase Meridian (Kidman), the cinematographer created a romantic firelight look. "When I'm using firelight, instead of letting it go completely orange, I'll get a big Perspex panel and have Charlie Saldana create a 'Perspex sandwich' using 'slices' of $\frac{1}{2}$ CTB. I did this for the first time on *Prince of Tides*. It's still a firelight effect, but it's going through a blue gel, so it doesn't look like an orange peel. I like to use real firebars and turn them up, but you can change the

color by adding a 6x4 sheet of blue; it looks better on the skin tones. Also, I'm not a big fan of flickering light everywhere. When I look at a fire at home, I see a little flicker around the fire itself, but everywhere else the light is fairly static. In Wayne Manor, with the dark oak all around, we added a lot of little pre-rigs to supplement the look. We had to light the wood so it wouldn't drop off into absolute blackness. We'd use a half CTO to get the fiery look, but frequently, instead of just gelling the lamp, we had everything on dimmers. We'd just use a stronger lamp and dim it down so it would go orange."

Color by



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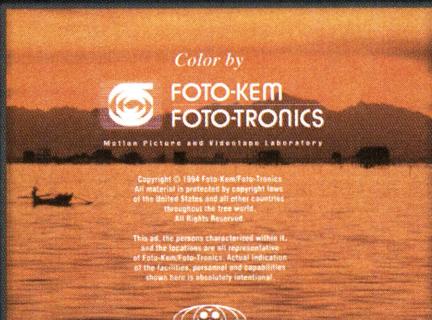


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Motion Picture and Videotape Laboratory

This dramatic look in the Riddler's Lair was created with a combination of 96 programmable Vari-Lites, green neon fixtures built into the floor, crackling neon "energy tubes" and a 10K Xenon beam bounced off an angled mirror aimed down through the set's overhead opening.



The filmmakers departed from the "baronial style" for several sequences at the Manor. For a surrealistic flashback sequence in which the young Bruce sees his parents' coffins at their wake, Goldblatt sought to lend everything, including the firelight, an eerie blue tint. He combined Xenon light through the room's windows with rain and smoke, adding a very unusual tactic to get the "bluer-than-blue" look he wanted. "I actually used a half CTB on the lamp lens itself," he reveals. "I put that gel into a filter holder and just stuck it on the lamp. The assistants thought I'd gone mad, but it created a strong, dramatic look. Using the gel that way broke the lens down a bit, which made the light in the scene go a bit smoky. We did other strange things in that sequence as well, such as shooting at 36 fps with synch sound."

A fantastic stunt sequence in the Manor follows Robin as he leaps from a chandelier to a balcony, back to the chandelier, to a balcony and then down through a doorway. Olympic gold medalist Mitch Gaylord doubled for actor Chris O'Donnell in the scene, and Goldblatt again made use of a Wiggins sky rig. "That sequence

was very carefully storyboarded, because you couldn't possibly do it all at once," notes Goldblatt. "To hide the safety airbag for overhead shots looking down, I used a trick I'd done on *Lethal Weapon 1*. We did a painting on canvas of the floor—the flagstones, the furniture, everything—and laid that above the airbag."

With all of the spectacular setups in *Batman Forever*, it's easy to overlook the more prosaic photographic challenges, such as making the actors look their best. Goldblatt's considerable experience again came to the fore in this regard, especially when he was shooting the film's female characters. "I did run into photographic problems with Nicole Kidman and, to a lesser extent, Drew Barrymore, because their skin and makeups were so pale," Goldblatt reveals. "The 5298 didn't take the overexposure very well at all. Nicole's skin in particular burned out very easily. I tried to keep a lot of light off her. Normal white skin might read a stop above your incident on the meter, but she would read two stops over. I used backlight, soft light, and all the old tricks to compensate and keep them looking glamorous. If my overall stop was

2.8, the incident on Nicole couldn't be more than 2 or 1.4.

"In Val's case, we wanted to make him look heroic, so I dropped the camera a bit," he adds. "We had two variations of the Batsuit made from sculpted rubber, and the second one had a metallic texture. I never lit it dead-on, because it reflected light really beautifully. When shooting the villains, I sometimes went a bit more distorted, but some of the makeups were pretty extravagant, so I tried not to go too far with the camerawork."

Having conquered the logistical summit of *Batman Forever*, Goldblatt looks back on the experience with the calm air of a battle-hardened veteran. "Overall, everything went quite smoothly," he says. "It was hard, hard work, but I really enjoyed this project. My relationship with Joel was very close and collaborative, and it shows in the finished film. I think he and I had a total of two rows. Both occurred within the first three weeks, and both were over within half an hour. On a project of this size and scope, that's a pretty good track record!"

Effects Help to Expand *Batman's* World

Proving that experience is key to understanding the ever-changing special effects realm, John Dykstra, ASC, leads a multi-faceted team to make *Batman Forever* an eye-popping epic.

by Ron Magid

With *Batman* (1989) and *Batman Returns* (1992), Tim Burton revolutionized the venerable comic book hero, using the grimly twisted *Dark Knight* visions of Frank Miller's modern graphic novel to reinterpret the cinematic Caped Crusader of yore. But while Burton's brooding crimefighter was a majestic figure when posed atop a pinnacle overlooking Gotham, he became stiff and awkward in action. And for all its cool blackness, Burton's Bat-world seemed claustrophobic and studio-bound — expanded only by traditional matte paintings, miniatures and a smattering of computer graphics (CG). This time around, a new production team headed by incoming director Joel Schumacher promises an infusion of new blood for the series.

With its operatic, comic-book look, *Batman Forever* promises to release Gotham City from the shackles of traditional effects. The crime-riddled metropolis has been expanded through the use of CG, and the digital revolution also helps the new Caped Crusader (portrayed by Val Kilmer in a streamlined Batsuit) do things on celluloid that his fans have only dreamed about. "Batman is much more active, much more heroic than he was previously, and the villains are more in the spirit of the comic," says visual effects supervisor John Dykstra, who was recently inducted into the ASC. "Batman does things he didn't do in the other films; the effects are uniquely suited to the concept of a much more action-oriented Batman."

The master of motion control, who made an Academy-rewarded mark on the *Star Wars* series, has used a blend of miniature and computer graphics effects to make this Batman unlike any other.

After pioneering motion control on TV for *Battlestar Galactica* (1978) and creating striking visuals for the controversial Tobe Hooper films *Lifeforce* (1985) and *Invaders From Mars* (1986), Dykstra closed his Apogee effects facility and hasn't supervised effects since. So Batman fans, rejoice: it's not only the man in the cape who's back.

During preproduction, Dykstra worked extensively with director Schumacher, cinematographer Stephen Goldblatt, production designer Barbara Ling, stage effects supervisor Tom Fisher, stunt coordinator Connie Palmisano and producer Peter MacGregor-Scott to visualize the *Batman Forever* universe. Dykstra and his team aided Schumacher's conceptualization of sequences based on the script and storyboards, and helped winnow the sprawling visuals down to the meat of the story.

Even so, the meat required 200-plus effects shots, many of which demanded computer graphics. For the past three years, Dykstra's only hands-on effects experience had been directing commercials involving motion control and bluescreen; in tackling *Batman Forever*, Dykstra was forced to confront the digital revolution that produced stunning visuals for *Terminator 2* and *Jurassic Park*. And he had to do it on a very tight delivery schedule that required legions of effects artists to ready the mammoth production for its anticipated release date. In fact, *Batman Forever* may hold the record for utilizing the most effects shops on a single show. For Dykstra, a man used to heading up his own ILM-style effects house, Warner Bros.' multi-shop strategy was another new challenge.

A partial list of the companies involved in the film's effects reads like the film production yellow pages: Illusion Arts and Buena Vista Visual Effects created matte paintings; Warner Bros. Imaging Technologies (WBIT), Pacific Data Images, Rhythm & Hues and Metrolight handled CG effects; the Chandler Group and two other production motion-control teams tackled miniature photography; Composite Image Systems (CIS) handled much of the compositing; EFilm, sister company of CIS, performed primary scanning and recording duties; and Video Image contributed some underwater miniature photography and additional compositing. Overseeing these diverse firms was a four-man team of effects supervisors, including miniature supervisors Boyd Shermis, Eric Durst and David Stump (who also handled first- and second-unit live-action plate and bluescreen stage photography), and CG supervisor Andrew Adamson.

Riding herd on the effects supervisors and keeping the facilities in line was visual effects producer Jo Anne Knox, Dykstra's longtime partner in crime. In their seven-year association, Knox has never seen anything like *Batman Forever's* workload: "I came in here in the morning, got on a treadmill and didn't stop till I got home at night. The film was in a constant state of flux, and there wasn't enough time to get it all done. Many of our shots weren't even in the original storyboards! I had to stay on top of all the facilities, see their dailies, decide what needed to be reshot and what was ready to be composited. I loved it when I could write 'final' on a shot. This was the heaviest show we've handled by far. It was mind-boggling."

"The picture is full," Dykstra agrees. "There are more sequences than you'll want to name individually. If I mentioned vendors at every step, each shot would be punctuated by fifty names!" Bearing Dykstra's caveat in mind, what follows is an overview of some of the more significant effects achievements of *Batman Forever*.

BUILDING GOTHAM

Gotham City is a primary character in any *Batman* film. But previous Bat-pix kept its New York-style pan-ethnic, pan-era architectural mix in studio-bound claustrophobia — a wrong that *Batman Forever* would right. In an unprecedented move, Dykstra convinced Schumacher to re-create the metropolis and its environs, including Wayne Enterprises, from the ground up, largely using computer graphics. "We wanted to show the entire city of Gotham, then move right into it," Dykstra explains. "That's tough to do with a miniature unless its scale is huge, so WBIT used CG to achieve that. Their contribution was significant in terms of interpreting Barbara Ling's design concept and establishing the look of the CG Gotham City."

WBIT architects Lance Hammer and Curt Augspurger, working alongside Dykstra, production designer Barbara Ling, art department supervisor James Hegdus and Mary Locatell, designed Gotham's layout before WBIT animators Terrence Masson, Steven Brand and other Alias artists modeled the city in CG. At the same time, Mike Joyce and his staff in the production's model shop used that conceptual material, with the input of Ling and Hegdus, to create the physical Gotham miniature that appears in an equal, if not greater, number of shots in the film. Nevertheless, large parts of Gotham City are nothing more than photo-realistic graphics. Talk about going back to the original comics.

Once Gotham was fully digitized, Dykstra handed WBIT the toughest assignment he could imagine: a 20-second shot which pans across the city and tracks into the Wayne Enterprises skyscraper — at sunset!

The graceful shot floats past detailed buildings crowned by monumental sculptures, all rendered in CG. Skyscrapers like Wayne Enterprises were supported by texture detail photographed off the stones on the front of Rockefeller Center, and other edifices, by Scheele and his WBIT associate, Amy Harrington. "We made full 4000-line scans of each still so our virtual camera could fly right into the stone detail and the textures wouldn't break up," Scheele says. "Then we aged them using real stains shot off dams and freeway overpasses. Those things add up to complex detail, and your eye is seduced into accepting that these are real buildings."

Like any real miniature, the CG city became less and less detailed the further back it went. But the greatest challenge was making it look believable in the setting sun, where there was nowhere to hide: the revealing rays of sunlight reflected off every faceted window. "That's why we were both challenged and a bit reluctant to do this originally," Scheele admits. "To re-create the reflectivity of glass, we fully ray-traced our approach to Wayne Enterprises. Ray-tracing literally traces every ray of light bouncing around the environment, using the highest, most time-consuming resolution, but it gives an exquisite sharpness and detail to the glass."

Matte painter Bob Scifo helped define the overall look of Gotham at WBIT, setting the CG city's mood by creating lighting studies on his Macintosh. "Bob's studies allowed our artists to come up with a simpler approach for lighting," Scheele says. "They used an extreme spectrum of lighting in the same frame, depicting both the warm orange magic-hour sunset, along with the shadows and vibrantly-colored neon light of Gotham at night. They achieved that contrast by simplifying their lighting to a single bright sunlight source, then improved upon that 'real' lighting by using the infinitely flexible CG tools to set lights in impossible places, like shining up through the CG 'street' as if it were invisible to illuminate buildings. If we tried lighting a miniature like that, we'd be in a world of

pain! But the result of such dramatic lighting and shadow naturally looked like a city lit by the sun."

Later, Scifo created several magnificent 3-D computer matte paintings to further enhance the look of Gotham, while Illusion Arts supplied another five matte-painted "poster shots" of Gotham City vistas to bridge the gap between traditional miniatures and digital techniques. Disney's Buena Vista Visual Effects supplied even more mattes.

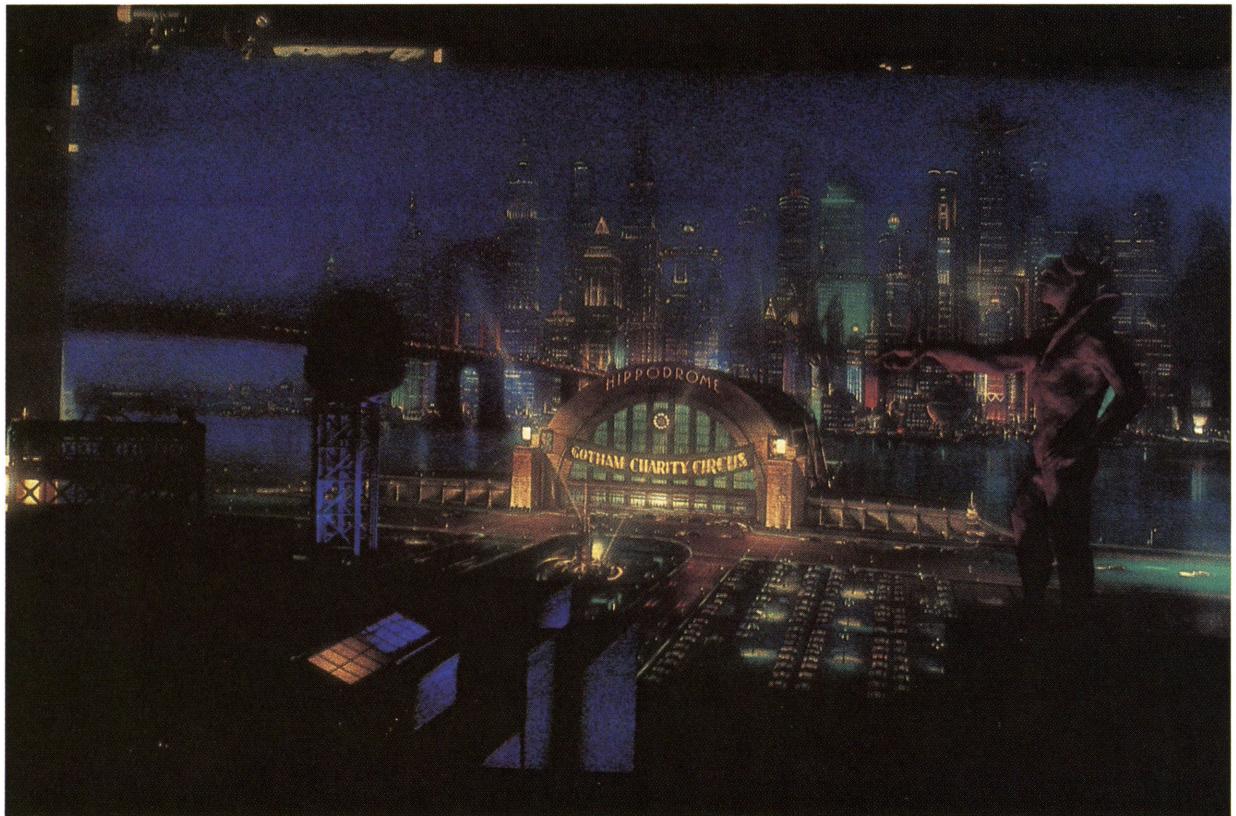
So, will audiences believe that Gotham City is more than a redressed cartoon? "As the city emerges out of haze and atmosphere, it looks totally photo-realistic, but has a mood and feel that hopefully set it apart from any city you've ever seen," Scheele concludes.

ACTIVATING THE BAT-SIGNAL

In previous Bat-films, the iconic searchlight used to summon the Caped Crusader was created with matte paintings and opticals, but it has now leapt into CG courtesy of Metrolight, with tremendous results. "The new Bat-Signal is a very graphic element with a far more realistic look, involving backscatter through the clouds," Adamson avers. "Metrolight first tiled many different photographic cloud elements into one high-res image that was split into ten layers and put into motion. The Bat-Signal itself was a CG element simulating light shooting through fog, which became less distinct as it 'traveled' through the clouds. Once they had this beam shooting through this moving atmosphere, they parted the clouds, revealing the dark sky dramatically illuminated by the Bat-Signal. Of course, a real beam focused in the clouds would look like a big blur, so they walked that dangerous line between graphic and realistic."

THE CG BATMAN

It wasn't just Gotham City that was done using CG animation; for several sequences, Batman himself was digitally rendered! But actor Val Kilmer needn't worry about job security — yet. This year's CG superhero was more stuntman



The Hippodrome Circus, where the acrobatic family The Flying Graysons will meet their doom. The traditional matte painting, one of 14 produced by Illusion Arts, consisted of two painting elements and a foreground miniature for depth. Water, smoke and steam effects were rear-projected to add life.

than thespian, leaping off the Ritz-Gotham Hotel and plunging 600 feet into an open manhole in the street below, using only his cape to break the fall.

In addition, Dykstra planned to drop the "camera" off the building with Batman. The camera would follow, catch up with, then pass him, turning to look back up as Batman fell out of frame. Soon, WBIT's CG artists created a plummeting background plate with the dynamics Dykstra was looking for, using a digitized Batman toy action-figure as a stand-in. All they needed now was the real thing.

Pacific Data Images (PDI), which was already handling several CG effects for *Batman Forever*, including a Bat-Luge that whisks Bruce Wayne to the Batcave, developed a CG Batman using Acclaim motion-capture data. After landing the coveted task, PDI's *Batman Forever* effects supervisor, Richard Chuang, found himself working with his former employee, Andrew Adamson, the production's overall CG supervisor. Together, they discovered just how far Dykstra was willing to go. "Some people have to be

convinced to use CG over other techniques," Adamson says. "But John was willing to push CG further than most of the CG artists, so we're almost trying to hold him back, which is a real nice experience."

Generating a 600-foot fall using motion capture — high-tech rotoscoping that traces movement from a live-action source — proved a tricky proposition, since the action was confined to the Acclaim stage. "We could either throw a guy off a building or try to capture some motion on-stage!" laughs Chuang, a co-founder of PDI. "So Dykstra filmed a gymnast performing on hanging rings, using Acclaim's motion-capture system to record witness points at each joint. We converted that raw joint angle data to a CG stick-man in our proprietary animation system. Then we launched our CG figure off a building to see how he looked with physics applied, which was pretty boring. Since physics no longer held true, our character animators added animation to our CG Batman."

PDI then used a body modeled by Viewpoint and Acclaim from a maquette match-

ing Kilmer's physique and mapped it over the motion-capture skeleton. Proprietary software translated the skeleton's movements to the body, creating a believable character with mass and flexing muscles. Lastly, their CG Batman was laid over WBIT's Ritz-Gotham plate, which Chuang describes as "one of the most elaborate backgrounds ever done in computer graphics."

Watching the CG Batman's acrobatic leaps hundreds of feet above the streets of Gotham, Dykstra realized he had the power to lift the curse on Batman's cape, which until now was among the most lifeless in movie history. Taking a cue from the old Kirk Alyn Superman serials, wherein the Man of Steel became a cartoon in flight, Dykstra asked PDI to use photorealistic computer animation to vitalize the Bat-cape. Thus, shots of Val Kilmer or a stuntman performing acrobatic feats of Bat-bravery were done sans cape, which was added as a CG element by PDI. The costume cape texture was then mapped over their animated element so it would match the cape in previous shots. "We simulated the cape's behavior using a simple geo-

metric representation posed in keyframe positions," Chuang says. "Our dynamic simulation system added wind turbulence to the cape draping over Batman's shoulder, but we could also switch to an animation system so we could, for example, tweak the cape into a really nice bat-shape while Batman was falling, then return to the simulation so the cape fell naturally at the end."

PULLING THE BANK HEIST

The fully CG Batman made another extended appearance to foil a bank heist by Bruce Wayne's former best friend, Harvey Dent (Tommy Lee Jones), now horribly mutilated and traveling under the nom-de-crime Two-Face. After escaping from Arkham Asylum, the villain stages a robbery, knowing Batman will try to stop him. Two-Face then attempts to destroy the Caped Crusader as he dangles from a helicopter over Gotham by crashing the craft through a sign and then into the harbor's Lady Gotham statue. "That sequence involved live-action bluescreen photography, miniature photography, both high-speed and motion control, and extensive use of computer-generated images and digital compositing," Dykstra marvels. "As Batman swings below the miniature helicopter traveling through the miniature city, the rotors on the helicopter are CG and Batman may be a bluescreen stuntman or PDI's CG figure — you'll just have to figure out which!"

The bank heist scene introduced another key component of the Gotham City landscape: approximately twenty $\frac{1}{24}$ -scale models, ranging in size from 15 to 27 feet high, Gothamized by Mike Joyce over Mark Stetson's existing art deco cityscape from *The Hudsucker Proxy*, which had previously been retrofitted for *The Shadow*. "In this sequence, the city was largely miniature, but the entire film is a blend," Dykstra insists. "We used WBIT's CG shot of Gotham City at dusk as a foundation to show Gotham pretty extensively during the nighttime bank heist. But when we're in close doing more dynamic shots with heli-

copters interacting with the buildings, we've used miniatures. Once we've created that environment, we can capture an awful lot of material on film very quickly."

Spearheading the Gotham City miniatures was the second of Dykstra's four production co-supervisors, Eric Durst. Working on the Chandler Group's miniature stage, Durst and company, including cinematographer Tim Angulo and motion-control supervisor Don Baker, used a plethora of models and techniques to give depth to Gotham and pull off the Bank Heist. At the bank, Batman is trapped in a safe which suddenly rips through the wall, pulled by a chain from Two-Face's helicopter. The effect was accomplished using high-speed photography of a $\frac{1}{6}$ -scale safe hitting a breakaway wall. Durst employed a $\frac{1}{6}$ -scale helicopter for close-up action of Batman climbing out of the safe as the chopper flew away, while both safe and stuntman were shot live-action against bluescreen. All three elements were then combed into the vertiginous miniature Gotham City panorama. For distance shots, Durst shot a $\frac{1}{24}$ -scale helicopter in-camera over the $\frac{1}{24}$ -scale city.

After Batman escapes, Two-Face's helicopter swoops past buildings, taking the Caped Crusader on a wild ride through the skies above Gotham. The challenge for Durst and his Chandler Group crew was creating miniature

cityscapes wide enough for that panoramic ride. "The set consisted of many buildings in front of a dark sky background with atmospheric clouds, but although the sequence is in cuts, we ran out of miniatures very quickly," Durst recalls. "We designed the shots on the computer first, but once we started setting up, a shot we thought needed eight buildings actually required sixteen because we could see through the holes. We redesigned our setups to be about four buildings across and four deep, so we'd see sixteen buildings in the cut as we flew past. Then we rearranged and redressed them for the next shot."

Plotting the action of each shot were the Chandler Group's motion-control supervisor, Don Baker, and cinematographer, Tim Angulo. Having shot the Gotham City miniatures in their former *Shadow* and *Hudsucker* incarnations (they also filmed the Zoo sequence in *Batman Returns*), the duo made an ideal team. Generally, Durst told Baker what he wanted to see in a given shot, and Baker and the motion-control programmer planned the action before he consulted Angulo about the proper camera height and lens. But there were times when Baker's task became a little more daunting: "For example, we were given a bluescreen element of Batman climbing out of the safe, which we'd match to our motion-control move on our



Dr. Chase Meridian's POV of Batman plummeting to the streets of Gotham from the heights of the Ritz-Gotham Hotel. WBIT created the CG background plates with proper falling dynamics by using a digitized Batman toy-figure as a stand-in.

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you are occasionally given the gift of a
truly ambitious assignment.

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and his Batman visual effects team for a
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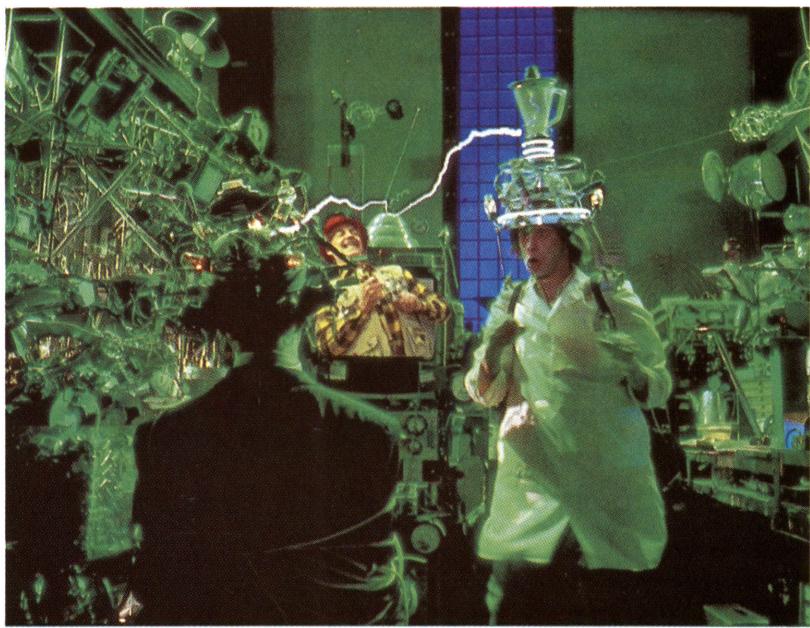
Visual Effects Team

John Dykstra	Visual Effects Director
Jo Ann Knox	Visual Effects Producer
Boyd Shermis	Visual Effects Supervisor
Eric Durst	Visual Effects Supervisor
Andrew Adamson	Visual Effects Supervisor
David Stump	Visual Effects Supervisor
James Hegedus	Art Director
Nick Davis	Post Production Supervisor
Jennifer Bell	Associate Post Production Supervisor
Lee Berger	3rd Unit Coordinator
Tom Boland	3rd Unit Coordinator
Miller Drake	Editor
Kate Crossley	Assistant Editor
Douglas Smith	Consultant
Francois Audouy	Computer Operations
David W. Allen	Production Secretary
Mary E. Walter	Technician

Batman TMs & ©1995 DC COMICS



Edward Nygma (Jim Carrey) tests one of his creations on his boss, Fred Stickley, at Wayne Laboratories before disaster makes him the Riddler. Electrical discharge effects courtesy of Composite Image Systems.



city model," Baker explains. "But sometimes after matching that motion, we programmed another axis of movement on our miniature city background using camera rotation and pan, so when the Batman foreground element was composited over it, the safe appeared to swing, creating a more exciting shot. We did a lot of that in the bank sequence."

Once Two-Face began crashing his helicopter into things, the need for both live-action and CG stunt-Batmen quickly became apparent — but just try telling which is which. "Batman is seen in mostly long or medium shots, but at certain points he swings very close to camera," says PDI's Richard Chuang. "We again used motion-capture technology, but there's more animation involved because he's climbing a chain and swinging through the air. The shots work well because Batman's against the night sky and he's pretty dark. Computer graphics are still a few years from being able to do close-ups, but we see that coming down the line."

As Batman climbs the chain in relentless pursuit, Two-Face tries to destroy him, crashing his helicopter through a huge neon sign, which sparks and explodes. The effect was created using high-speed miniatures by the Chandler Group and live-action pyrotechnics rigged by stage effects supervisor Tom Fisher. As the cameras

rolled at 120 to 200 frames per second, the $\frac{1}{6}$ -scale helicopter was literally catapulted through the sign, which was 10 feet high and 15 feet wide. "Bill Shourt built a 25-foot-long catapult on an 18-foot-high elevated track," Durst grins. "The catapult used bungee cords to maintain tension, which, when released, propelled a ram carrying the five-foot helicopter into the set. Tom Fisher timed four or more pyro charges to strike as the helicopter blasted through the wall of high-intensity KinoFlos backlighting the sign. We shot the blast-through from front and back, but not simultaneously, since the pyrotechnics needed to be keyed for the specific camera angle. The only trouble was that the helicopter rotors looked slow at high speed, so PDI replaced the rotors with CG ones and added realistic motion blur, making them appear to move at normal speed."

Two-Face's triumph withers as Batman bursts into the 'copter's cockpit. In the ensuing fight, the pilot is killed and Two-Face bails out as Batman faces certain doom, on a collision course with Lady Gotham, a Statue of Liberty-style edifice in the harbor. The finished sequence intercuts the $\frac{1}{24}$ -scale helicopter motion-controlled within the $\frac{1}{24}$ -scale Gotham City environment, as Batman and Two-Face duke it out in a full-sized helicopter cockpit heading straight towards a $\frac{1}{6}$ -scale Lady Gotham

model. The challenge for Baker and Angulo was maintaining the consistency of lighting from one set to the other. Says Baker, "That became quite problematic when we scaled our miniature lights on the three-foot statue in the $\frac{1}{24}$ -scale city set, then tried to match that look to the $\frac{1}{6}$ -scale Lady Gotham seen through the approaching helicopter's cockpit."

If you think that's tough, get this: it wasn't the helicopter approaching, but Lady Gotham! "To make the approach more dynamic, we actually pushed the statue toward camera so it appeared as if the helicopter was closing in on Lady Gotham," Durst reveals. "The plate was done in-camera on the stage. We shot our $\frac{1}{6}$ -scale Lady Gotham on rails moving toward the full-sized helicopter as Batman and Two-Face were fighting." After Two-Face bailed out, the $\frac{1}{6}$ -scale helicopter crashed at high speed into the $\frac{1}{6}$ -scale Lady Gotham, whose breakaway visage shears off as the rotor blades hit her face. A pyro charge in the helicopter blew it up on impact.

ENTER THE BATCAVE

Unlike the many Gotham cityscapes that blend miniatures and state-of-the-art CG throughout *Batman Forever*, the ubiquitous Batcave combined miniatures and old-fashioned matte paintings. This current cinematic adventure necessitated a trip to that inner sanctum, the Lower Batcave, where Batman develops his prototype crime-fighting gear after the Riddler (Jim Carrey) destroys the Upper Batcave and all the familiar Bat-gadgets, including the Batmobile, Batwing and Batboat. But never fear, deep in the bowels of Wayne Manor lurk new, improved models. In the first establishing shot of the Lower Batcave, the camera tilts up from Batman and Alfred (Michael Gough) to reveal the sleek prototype Batwing hanging upside-down from the rafters. "It seemed appropriate somehow," Dykstra deadpans. "After the tilt up, the Batwing's external lights come on and the wings fold out as it prepares to take off. We used miniatures and other things for that, so the Batcave is a mix of models, an enormous beau-

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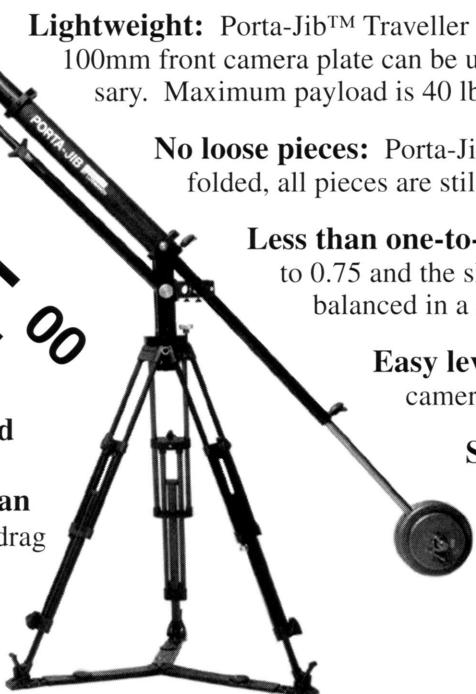
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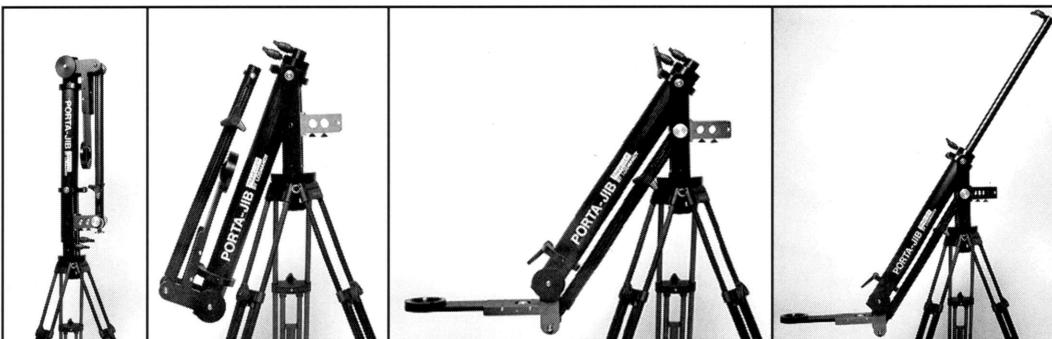
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Batman takes
the 600' fall into
an open
manhole
courtesy of
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Images and
Acclaim motion-
capture
equipment at
Warner's. The
computerized
Crusader's cape
by PDI so
impressed
Dykstra that
they similarly
rendered the
garment in some
live-action
scenes.



tiful set Barbara Ling built down in Long Beach at the *Spruce Goose* hanger location, and matte paintings by the guys at Illusion Arts."

Spearheading the Batcave and the Claw Island sequence following it was the third of Dykstra's visual effects co-supervisors, Boyd Shermis, who generated much of the excitement in *Speed*. Although Shermis' specialty is miniatures, he allows that "over 50 percent" of the Batcave was a traditional matte painting. He explains, "The production shot the live action, we shot the miniatures, which consisted of about ten elements, and then Illusion Arts rear-projected those elements into the matte painting they created, which enabled them to tilt up from the live-action Batman and Alfred to the miniature Batwing. The Lower Batcave looks similar to the Upper Batcave, although there was some water below to support the idea of a Batboat."

GOING MOBILE

Both the Batwing and Batboat are important players in the all-out Bat-launch that occurs when Batman and Robin (Chris O'Donnell) learn that the Riddler is hiding out on nearby Claw Island. The Batboat effects were overseen by the fourth of Dykstra's co-supervisors, David Stump, who also handled the visual effects portion of the car chase involving the Batmobile, which does a

wheelie and climbs the wall of a dead-end alley, thwarting Two-Face. The Batboat launch involved a full-scale craft for closeups and a $\frac{1}{2}$ -scale miniature for the establishing shot. Both miniatures were built by TFX. "David filmed the model Batboat shooting out of a miniature launch tube in a dry environment," Shermis says. "A full-scale water element was later added to create spray coming off the bow, and a matte painting of the Batcave completed the shot."

Similarly, the Batwing effects involved a full-scale cockpit and wing section for bluescreen closeups of Kilmer at the helm, as well as two different $\frac{1}{2}$ -scale motion control miniatures, measuring four feet from wingtip to wingtip, built by Grant McCune Designs. "One was used for the launch from the Batcave and had practical lights and motorized, motion-controlled wings which actually opened up," Shermis recalls. "We used the other for all the flying shots through the Batcave and the approach to Claw Island. We shot that Batwing model against bluescreen, then matted it over open sea and night sky for several shots, adding layers of foreground 'fog' to match the live-action footage."

But there's another Batwing, used for a very specific, top-secret purpose. As the Riddler and Two-Face play a seemingly innocent game of Battleship, their exchanged coordinates correspond

to mines lacing the Claw Island harbor, which blow the Boy Wonder-helmed Batboat out of the water — paving the way for yet another new design in the next Batmovie. Suddenly, a laser beam clips the circling Batwing, sending it plunging underwater, where a remarkable transformation occurs. "The Batwing converts into the Batsub, which Batman uses to save Robin from the clutches of the Riddler's thugs," Dykstra reveals. "It was done using a large-scale Batwing miniature shot wet-for-wet."

The $\frac{1}{6}$ -scale Batwing, measuring 13 feet long and 8 feet across, jettisoned both wings underwater, transforming in-camera into the Batsub, echoing *Batman Returns*' Batmobile-into-Batmissile gag. "The Batwing shed a few pounds, turned on a different propulsion system and lights, and became the Batsub," Shermis explains. "We remotely triggered hydraulic devices to lose the wings and blow the hatch with split-second precision, but the fuselage, with its big central fin, remained identical. Pete Romano shot the $\frac{1}{6}$ -scale Batwing at high speed, using Arri 2Cs in special underwater housings, which explains why we needed a large model: it's very difficult to scale water. If I had my way, we would've shot a $\frac{1}{4}$ - or $\frac{1}{3}$ -scale Batwing, even though it would've been difficult to handle. At $\frac{1}{6}$ scale, the miniature was just small enough to maneuver around." Additional underwater effects, such as Batman exiting torpedo-like out of the Batsub, were handled by another *Batman Returns* and *Speed* alumni, Video Image (VIFX), using CG to enhance the tank photography.

STORMING CLAW ISLAND

Despite some computer enhancement, *Batman Forever's* spectacular climax makes relentless use of traditional techniques as Batman and Robin attack the Riddler's stronghold. An extremely detailed miniature was used for the Batwing approach. "That model was based on Barbara Ling's design concept of an oil refinery retrofitted into the manufacturing center of the Riddler's empire," Dykstra says. "It has plenty

14 Effects Houses Worked on "Batman Forever", But the Digital Shots Matched. WHY? EFILM™.



Image by WBIT

"Batman Forever"© Warner Bros.

"Batman Forever" visual effects supervisor John Dykstra turned to EFILM to provide primary digital input scanning and film recording for the many effects houses.

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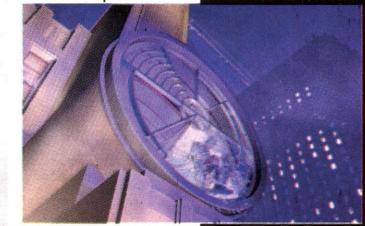
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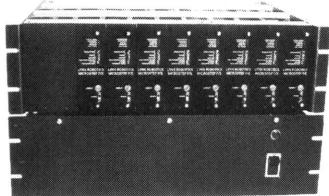
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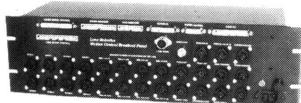
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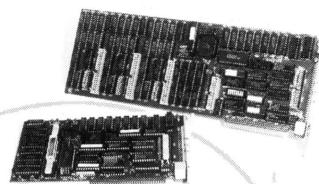


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of atmosphere, smoke, lots of lights, lots of arcing electricity. For an island, it does an awful lot of things!"

No kidding. As Robin climbs its rocky base, the island suddenly rises out of the ocean and up into the sky on a huge hydraulic ram, carrying the Boy Wonder away as a stunned Batman watches. "The island and ram were one unit, so when it rose to a scale height of 180 feet, the model stood 20 feet tall," Shermis confirms. "The lift was all sleight of hand: we moved the camera relative to the model. At the end of the sequence, we tilted up over Batman's shoulder to see the island finishing its rise."

Beyond Claw Island's industrial power-plant facade lurk two sinister components: the geodesic dome housing the Riddler's headquarters and an antenna-like neural-energy collector. "Our Claw Island model was close to 10 feet in diameter and about 12 feet high, including all its superstructures," Shermis says. "Besides its fine detail, it probably had about 500 practical lights, including tiny aircraft warning lights and motion-control searchlights panning across the sky. Consequently, most of our seven or eight miniature cuts were shot multi-pass. Every light needed to be exposed differently, so we filmed anywhere between eight and 15 separate elements per shot! Sometimes I'd do in-camera compositing by backwinding the film and exposing the next pass, but usually we shot each element separately and stacked them up in post."

Additional CG and hand animation portrayed the ultimate incarnation of the Riddler's Beam, representing unleashed mental energy. The Beam went through its own character arc during the course of the film, beginning as arcing electricity and ending as a pencil-thin laser of neural energy collecting on the giant receptor atop Claw Island.

Batman soon breaks into Claw Island's hydraulic ram, scaling its core. As the Caped Crusader reaches the top, the Riddler drops Batman's love, Chase Meridian (Nichole Kidman), along with Robin, into the cylinder, then seals it with a massive metal grate. Racing after his friends, Batman performs superhuman feats before

catching them in mid-flight. The sequence required intercutting between the Chandler Group's high-speed and motion-control photography of the miniature cylinder interior and crashing grate, and a CG background rendered by Rhythm & Hues. "Batman, Robin and Chase had to appear to drop several hundred feet through this tunnel, lit by shafts of question-mark-shaped light," says the production's overall CG supervisor Andrew Adamson, who guided R&H's effects supervisor Kathy White and producer Theresa Chang. "It was quite an extended sequence: there were 13 quick CG shots of them falling, intercut with another 15 non-CG shots, so R&H had to create a cylinder that in real life would've been 1500 feet tall! They built a wireframe model of the cylinder, then mapped textures from the the Chandler Group model plates onto that CG object, giving it dimension where the question marks were cut through the wall. They then created the final motion of the shots, tracking individual live-action bluescreen elements of each actor into the environment so their figures cut through those question-mark beams. To top it off, the interactive lighting was rendered."

Before diving into the cylinder to rescue his friends, Batman destroys the power center of Claw Island, which soon begins exploding. "We wanted it to look more like a nuclear fusion meltdown, but for the sake of the filmgoing public, we made a multi-charge fireball explosion out of it as well," Shermis states. "Prior to the explosion, we did several compositing tricks to get all the various pieces of filth spewing. The destruction itself involved a combination of motion control and high-speed pyro effect photography. We blew up the top of the model several times, shooting at around 270 frames per second."

DYNAMIC TEAMWORK

As all the elements of *Batman Forever* -- live action, miniature and CG -- were produced, the daunting process of compositing was undertaken. The large number of vendors presented the potential for disastrous cut-to-cut, color and contrast mismatch. Dykstra re-

viewed as many examples of film throughput as was practical. "I found that the quality of film input and output varied widely from vendor to vendor," he says. "To stabilize the color and contrast of the output, Dykstra selected one vendor to do most of the input and output. "EFilm was just coming on line and wanted to make a point. Their quality and willingness to make us their primary client gave us confidence." Dykstra also took advantage of the relationship between CIS and EFilm by doing the majority of the digital compositing in their environment. Many of the other vendors who provided visual effect product for *Batman Forever* did their own input and output. Dykstra observes, "CIS, the Post Group, Pacific Title, Pacific Ocean Post, OCS, Site Effects, 525 and Wonder Film and their artists did a fantastic job for us. The quality and consistency of the work in the finished film recommend all of our compositing vendors for their willingness to cooperate. They put the production's needs before the need to compete."

In terms of the sheer number and variety of its effects, from CG environments and character generation to miniatures and straight compositing, few films have been as ambitious as *Batman Forever*. Thanks to the effects co-supervisors and producers and one of the largest teams of effects houses ever assembled for a feature film, *Batman Forever* might just deliver all the eye-popping spectacle of the original comic books. But one thing is certain: John Dykstra has mastered the digital technologies that emerged in his absence from the effects field, and returned to his forte in triumph. "I've been on this project about a year," he says. "As I toiled up the steps at 11 at night, going home in anticipation of my six o'clock rising time, I thought to myself, 'Gee, what an opportunity!'"

"If there's anything I have to say about my experience in the visual effects realm, it is that you are required to embrace change. The digital revolution has made us all students, so the idea that we will then become masters and not become students again must be put aside."

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Camelot in Shadows

First Knight reveals a disparate world of light and shadow in the romantic age of chivalry.

by Bob Fisher

Faced with the daunting task of photographing the medieval world of *First Knight* largely on location in the United Kingdom, Adam Greenberg, ASC, admits that there were times when he was frustrated, his mood darker than the blackest night in Wales. He was, after all, working 6,000 miles away from Los Angeles, where specialized lighting tools are just a phone call away.

For weeks on end, the director of photography was shooting huge night and day exterior scenes in open fields, with hundreds of extras and horses simulating desperate battles. He was working with a new crew, including his gaffer, operator and assistant. The setting was the 12th Century, allowing for limited source motivation for ambient light. Night scenes could portray only fire and moonlight, and many other key scenes were filmed in dense forests where sunshine barely penetrated.

"It was important for the audience to feel the darkness," says Greenberg. "We made it our ally. We wanted them to feel what it was like living in the 12th Century in England. By day, Camelot looked like a place where you would want to vacation. At night, it was dark and shadowy. There

were fireplaces and torches, but the light doesn't really fill those big rooms. Life was very different for people who lived in those times."

The era was also difficult for the team trying to re-create it; the temperature was often biting cold, rain was always a possibility, and the production schedule was unrelenting. If you're imagining the Technicolor world of *Camelot* (1967), forget it — although *First Knight* is based on the same legendary tale, in which King Arthur (Sean Connery) and the first knight of his roundtable, Sir Lancelot (Richard Gere), pursue the affections of Lady Guinevere (Julia Ormond). There are magnificent medieval

Photos by Frank Connor, courtesy of Columbia/Tristar



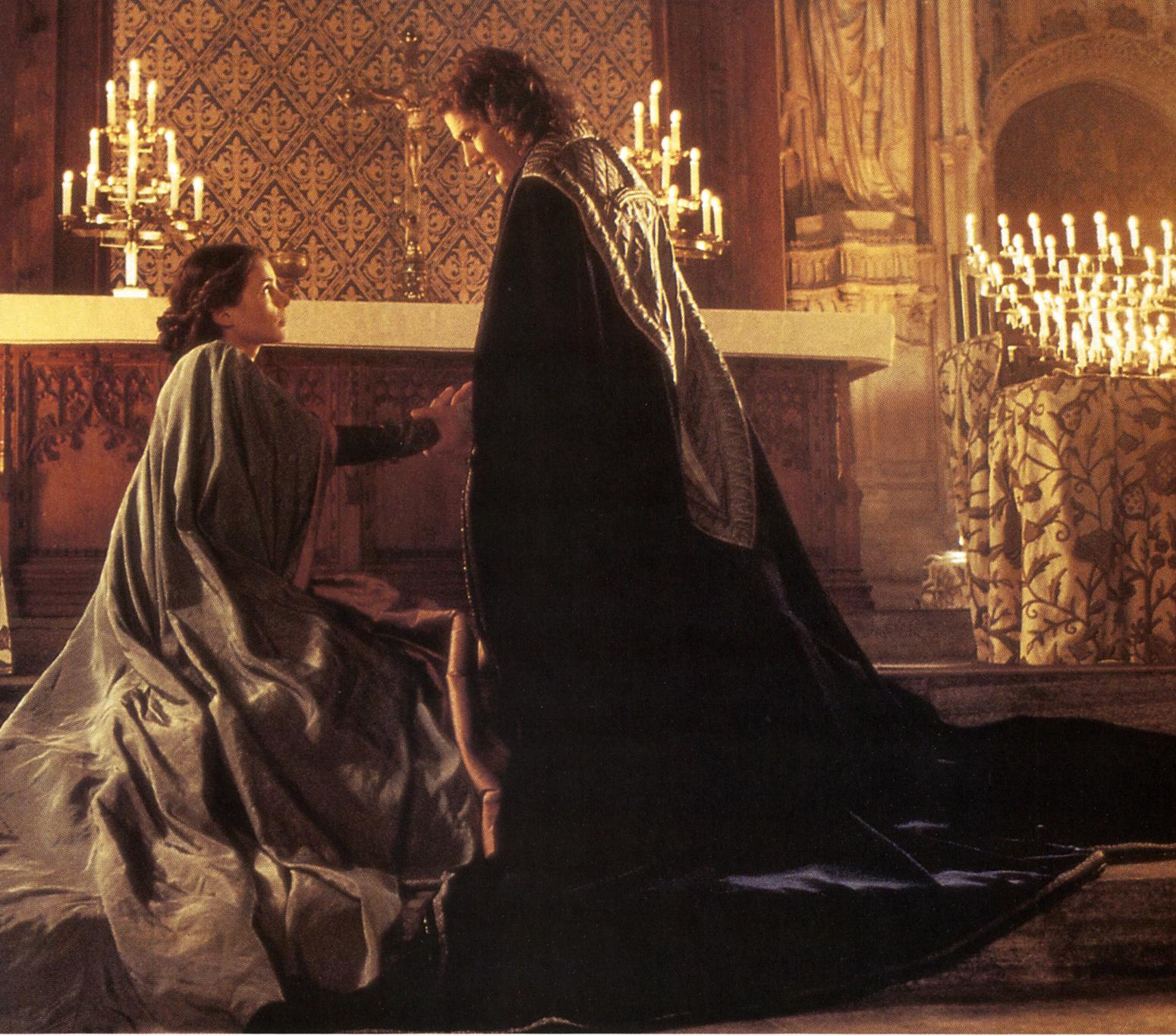
castles, armies in shiny armor, powerful horses, and the clanging of metal swords during robust action scenes — perhaps owing more to *Excalibur* (1981) than to any Lerner and Loewe libretto. No, the audience isn't humming along with the music in *First Knight*, but vicariously experiencing life 700 years prior to 20th-Century amenities.

First Knight was produced by Columbia Pictures at Pinewood Studios in London, on the plains at Stratford, and at locations in Wales. It was directed by Jerry Zucker, who also co-produced the movie with Hunt Lowry. It's a timeless



Richard Gere) pursue the affections of Lady Guinevere (Julia Ormond). There are magnificent medieval

This page, top: Director Jerry Zucker (left) and cinematographer Adam Greenberg, ASC confer on the set. Bottom: That's Arthur, King Arthur, as played by Sean Connery.



bedtime story that everyone hears in their childhood, but Greenberg admits that he wasn't initially eager to shoot the film. "Four months is a long time to be that far away from home," he confesses. "You only have so many years to work, and there are only so many films you can make in that time. You have to be selective."

Greenberg's big break in Hollywood came in 1983, when James Cameron asked him to photograph *The Terminator*. From there, he went on to shoot several mainstream Hollywood films, including *La Bamba*, *Turner and Hooch*, *Alien Nation* and *Near Dark*.

The cinematographer soon demonstrated that he had a golden touch at the box-office with such films as *Three Men and a Baby*, *Terminator 2: Judgment Day*, *Sister Act* and *Dave*. He has also suffered a few disappointments, with *Toys* at the top of that list, though he still considers that film among his personal favorites.

First Night is his second film with Zucker; the first was *Ghost*, which remains one of the top box-office draws in history. Zucker wanted Greenberg to shoot *First Knight* in part because they had enjoyed an easy working relationship and because he knew that

Greenberg wouldn't be overwhelmed by the production's daunting logistical and technical challenges — after all, Greenberg had lit a five-mile stretch of freeway for *Terminator 2*'s climactic nighttime chase sequence. However, for that scene, he had used every available lamp in Los Angeles, and those types of resources simply weren't available in the United Kingdom. There were to be no Muscos or Night Lights — just a Wendy on a construction crane mired in a muddy field.

Greenberg and Zucker came to an important artistic decision during one of their first dis-

In a candlelit chapel, Sir Lancelot (Richard Gere) professes his love for Lady Guinevere (Julia Ormond).

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cussions. "I like the anamorphic format, but this is basically a love triangle, involving Arthur, Lancelot and Guinevere," says Greenberg. "There are complex relationships, and I felt the story would translate better to a narrower 1.85:1 frame. It was more romantic, and it allowed us to draw the audience deeper into the dialogue. There are tight two-shots with Lancelot and Guinevere sharing looks that tell the story without words. I put a subtle light around their eyes. It lets the audience see what's in their hearts."

Because he was working on *Renaissance Man* until three weeks before *First Knight* started production, Greenberg had very little prep time for assembling a crew in England or for pre-lighting standing sets. After arriving in England, he was working seven days a week just to catch up. Except for Zucker, Greenberg was working with everyone for the first time, including production designer John Box (*Dr. Zhivago*, *Lawrence of Arabia*) and Italian costume designer Nana Cecchi (*Ladyhawke*).

"Nana Cecchi, with great support from Jerry, made a very important contribution with the wardrobe," he testifies. "There are

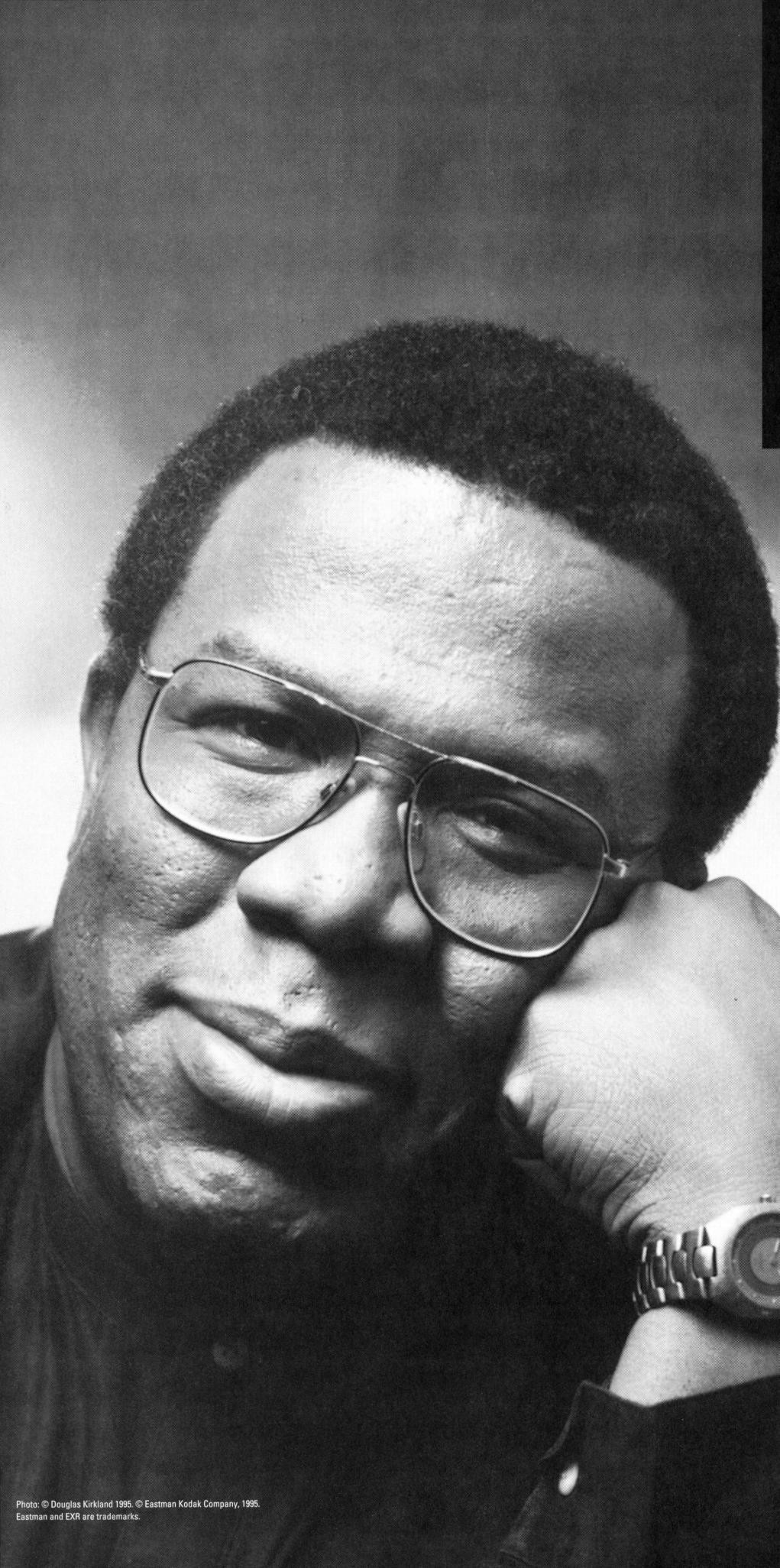
a lot of earth tones, except for Arthur's army, and that makes them stand out. Their costumes are a rich dark blue with a distinctive sheen."

William Nicholson's script required shooting in isolated locations without telephone poles, houses, airplanes or other modern artifacts. They shot those scenes in the northern Wales countryside, where what passes for traffic still moves on an ancient Roman highway.

But while a need for technical austerity may have dictated many of *First Knight*'s locations, the picture also boasts some groundbreaking digital postproduction which helps establish a proper feeling of time and place. This includes the digital compositing of models, e.g., a miniature castle at Camelot and the surrounding town, the replication of 50 horsemen into a convincing cavalry unit, the multiplying of hundreds of extras into opposing armies of thousands of soldiers, and the compositing of matte paintings of background elements for various scenes. For example, a mountain range was added to the far horizon of one scene, the texture of the sky was altered in another to make it look more dra-

matic, and a flight of birds was inserted in the foreground of an exterior setting.

Even in the narrower 1.85:1 aspect ratio, the film boasts a feeling of wide scope augmented by endless depth of field. Greenberg gives some of the credit to the richness of the matte paintings, and to believable models which meld seamlessly with the live-action footage. Artisans at Shepperton Studios built a model of the castle which matched the full-sized inner courtyard and castle walls built as sets at Pinewood Studios. The models and mattes were filmed to match the lighting and visual perspective of Greenberg's live-action photography. The film was converted to digital format with a Kodak Lightning scanner at Cinesite (London); the images were manipulated and multi-layered composites were made at a Cineon digital film workstation. CGI touches were added to enhance authenticity: a few fluttering computer-generated flags were appended to the ramparts, and in a night sequence, some torchlight and lake reflections were added. Greenberg thanks special effects director George Gibbs and Cinesite (Eu-



BILL ON FILM

"I don't want to sound like a 'tech head.' People think you're not artistic if you talk about the craft. Cinematography is ultimately about passion. But the truth is that passion without technique is like a car without an engine. Technique gives you the freedom to express what you feel about a character or a song at that moment. I'm not talking about being a soloist and forcing a visual style on a picture. That's not my style. I never think of it as my movie. It's always our movie. Ultimately, it's the director's movie. I don't have a problem with that. What I mean is that anyone can dream up ideas about how something should look. Unless you can do the physical part of getting the story on film within the limitations of the budget and time, your talent is meaningless. I never want to become a commodity, where you wheel me onto a set and get the same thing every time. Every movie should be hand-made. I feel that it's my responsibility to push the envelope as far as I can. We have so much creative freedom today. You can manipulate exact shades of color with digital technology. There are 10 stops of latitude in the newest EXR films. But, I still believe if you can tell a story with a single source light, that's the way to do it. I'm an optimist. I truly believe that life is a dance and not a wrestling match."

Bill Dill

Bill Dill's credits include *Sidewalk Stories*, *The Five Heartbeats*, *Nervous Ticks*, *Jason Goes to Hell*, and the *M.A.N.T.I.S.* pilot. He also works as a commercial and music video producer / cinematographer.



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Greenberg often took an abstract approach to night photography, using small splashes of moonlight and firelight to highlight key areas of the frame. The rest is left to the audience's imagination.

rope) for blending their work with his original photography.

"It's amazing to see this period on a big screen, and it doesn't look phony," Greenberg says. "We recreated the past in an authentic way. I think that's the only way that this type of movie will be made today."

But while rebuilding a world of seven centuries past was technically demanding, present-day atmospheric conditions made Greenberg's on-set duties equally complex. "The weather was miserable," he says, "and that made everything more difficult. We had one big exterior action scene that takes place in a courtyard at Camelot, with a big battle, a blazing fire and 400 extras. We built that exterior set at Pinewood. After scouting, we decided that 3:30 to 4 p.m. was the perfect time to shoot, as the sun was very low in the sky and we were covering 360 degrees. Jerry wanted the audience to see everything. We shot this scene over 10 days, and every five minutes it seemed like the weather changed. We had sunlight, clouds, rain, and even hail. I wanted to cover the entire set with white plastic, like Sven Nykvist [ASC] did on *Hurricane*, but I had to settle for using 30-by 40-foot silks to control the light, and I poured artificial sunlight through them."

In one scene, Guinevere enters Camelot at night and is greeted by hundreds of people pouring out of the city and lining both sides of a causeway crossing a lake in front of Camelot. The cinematographer had to light the live-action footage entirely with the Wendy. There wasn't a Musco available in England, and there wasn't time or budget to fly one in from California, so Greenberg used



a Wendy with 200 bulbs on the business end of the crane arm — with no way to use gels or filters.

"I don't normally like using bluish light for the moon," he details, "but in this case, I thought it would be more romantic. Since there was no electricity in those days, it was natural to have darkness surround you. I changed some bulbs in a few sections of the Wendy light, so the Kelvin temperature was around 4200 degrees. I didn't use any front- or fill-light on the ground. I just used backlight and crosslight. You see glimpses of blue costumes and red torches in the moonlight. It's very romantic-looking."

In contrast were the scenes featuring Arthur's steel-clad legions. The silvery helmets and armor have a distinctive sheen and worked very well at night because they sparkled and created spots of reflected light in the blackness.

"I didn't worry about seeing details in faces in the night scenes," Greenberg adds. "I lit it to look very abstract, with small splashes of moonlight and firelight reflecting off armor, except when we were close up. You don't have to see everything, because your imagination fills in the details. I was more concerned about filming the horses, because I had never shot a film with so many of them. I spoke with the wranglers, as I didn't want to startle the horses with lighting that was too bright. They all had different answers, so I decided to trust my instincts and planned various options in case something didn't go right."

Though Greenberg says that every plan had a backup plan, a degree of finesse would also play a part. "There is an important scene

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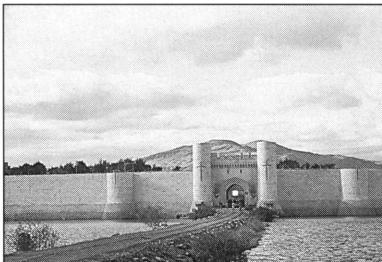
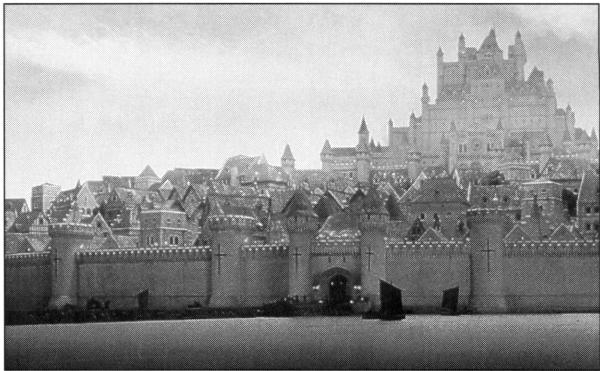
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where Julia is riding a horse while watching a distant battle," he recalls. "She rides down into a valley. I wanted one side to be dark, and then we slowly revealed the skyline. That's when the audience discovers that things are starting to turn light; they will understand there has been a transition of time. It was a delicate thing to get the horse in the right position and a kick light on Julia's face."

For the grand battle scenes — covered with up to five rented Arriflex cameras by the first unit and with three more cameras by the second unit, headed by Arthur Wooster — Greenberg and Zucker shot tests to determine how to most convincingly make the sword fights seem authentic, and to find the best angles and frame rates for coverage.

"The [actors'] movements weren't always as smooth as we would have liked, but I discovered that if I varied the frame rate just slightly, it made a big difference," Greenberg explains. "Sometimes I shot at 22 frames a second and other times at 28 frames. Then, when they went into dialogue, I slipped back to 24. That's one of the nice things about the Arri 535 camera. It gives you precise control over frame rate, and I used that feature a lot."

The real-time adjustment of frame rate as a form of visual expression is a relatively new di-

Left and below: The magnificent kingdom of Camelot was created with the help of digital technology. For this scene, a miniature was composited behind the kingdom's wall.

mension in the art of cinematography. In the past, it was always possible

to alter the frame rate on a moving shot by hand, but it required considerable skill on the part of the assistant cameraman. Now, Arriflex and other camera manufacturers have added a feature which automatically locks the lens opening to frame rate to avoid tell-tale variations in exposure.

About 80 percent of *First Knight* was recorded on Eastman EXR 5298 film, including all night exteriors and interiors, and some daylight exteriors filmed in forests and other shadowy areas. Greenberg first used the 500-speed stock while shooting *Junior*, and found that it gave him very broad exposure latitude for recording a wide range of details in the brightest and darkest elements of the frame.

"The 5298 was perfect for this story," says Greenberg. "We wanted Richard and Julia to be romantically appealing, and it was important for the audience to empathize with them. I didn't use any diffusion or filters, so it's all very natural-looking. And this stock gives you nice blacks and a good tonal range without the sharper contrast that you get with the 5296."

His basic stop of T4.5 to 5.6 gave him the depth of field he wanted; the deep stop was also important in night scenes where there were fires or torchlight. "I wanted rich red tones," Greenberg says, "and fire washes out at T2.8. If you're shooting at a faster stop, like T1.2, it turns white. That's another reason why I wanted a faster film. Back during the days when the fastest films were 100-speed, everyone would light with Brutes and 10Ks, because that's what we had to work with. Now, we have a 500-speed film, and I often find

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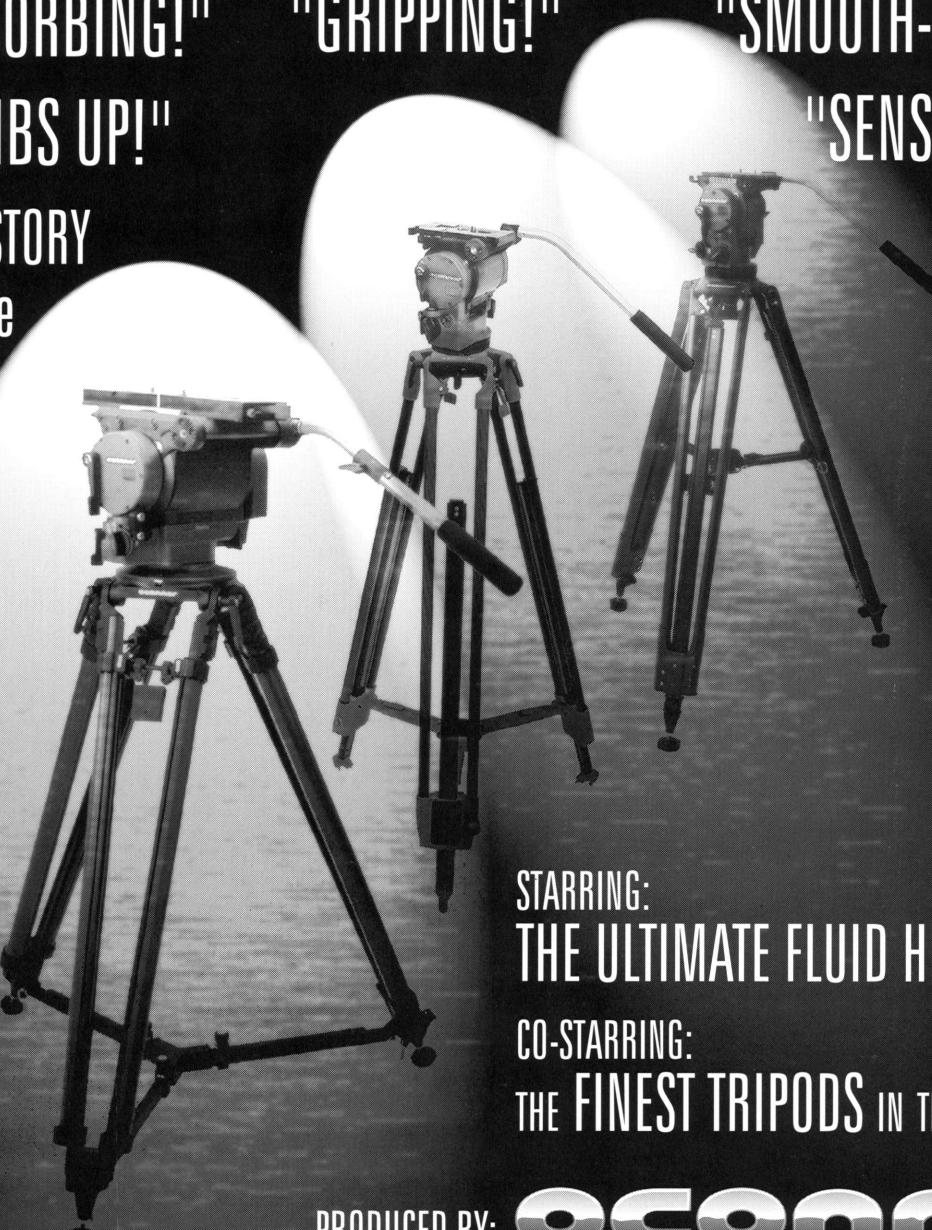
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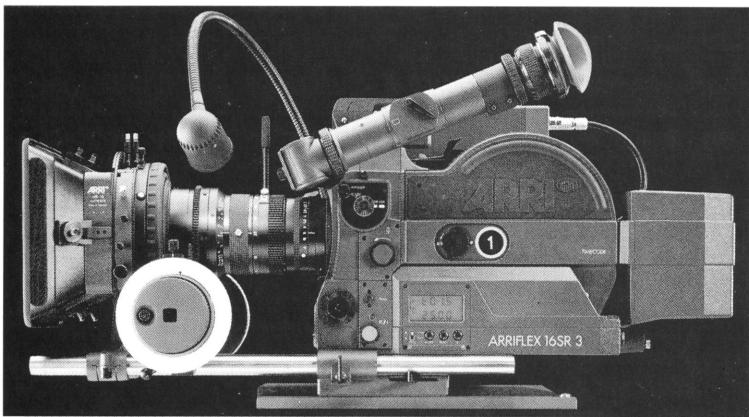
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myself lighting with 20Ks. We used to have to fight for the stop, but with the new stocks we're getting a more natural look.

"We did a lot of our exterior shooting in the forest, in part because that was a way of avoiding bridges, roads and other physical things which didn't belong in the 12th Century," he continues. "There were times in the forest at night where the light was so dim I couldn't get a meter reading. But if we added light, it would look fake."

Greenberg's basic visual strategy of exploring the time period and gradually revealing its secrets kept the camera movement fairly restrained, with a few exception. A frantic battle scene, involving some 400 extras and many horses, was filmed over eight days with three handheld cameras visually punctuating the tension. The days were short — it got dark by 2:30 p.m. — but Greenberg and Zucker were determined to squeeze the most out of every moment of light, with two cameras covering the main action and one trained on background activity.

An Arri was jostled quite a bit for a scene in which Guinevere's carriage, traveling through the forest, is attacked by marauders. Here Greenberg used a home-made "bungee-cam" for filming inside the moving carriage, to give the audience a taste of riding in an already bumpy vehicle in the middle of a melee.

Tracking was usually done on a dolly, and only when it was germane to the flow of the action. There were no remote-camera or big crane moves, in part because these devices weren't available. Greenberg had access to a hot-head, but he recalls using it only once.

"I turned down other films during the six or eight weeks we were timing *First Knight*, because I believed we could accomplish something special," Greenberg says. "Most studios don't like to make epic movies, because of the cost of building sets and all the extras. I think we proved that there is a new way to make epic films about great stories."

In the Outback with Napoleon

Filmmakers emulate Dr. Doolittle while shooting shaggy-dog tale.

by George Turner

Although the monuments are British, the autos and TV sets Japanese, and most of the movies American, the continent of Australia, with its varied topography, fantastic wildlife and lively populace, can be mistaken for nowhere else.

Unique, too, is filmmaking in Australia. Those films which have reached a world market — the *Road Warrior* trilogy, *Picnic at Hanging Rock*, *Crocodile Dundee*, *Breaker Morant*, *Sirens* and *The Wave*, for example — are impressive not only for imagination and craftsmanship but for being unlike anything else in the mainstream.

A recently completed production from the state of South Australia, *Napoleon*, puts an Aussie spin on the wildlife adventure films pioneered by Disney. Produced by Mario Andreacchio and Michael Bourchier, proprietors of Furry Feature Films of Adelaide, and Ron Saunders of Film Australia, *Napoleon* was budgeted at 4.3 million Australian dollars, which is closer to three million American dollars — an impressive figure for a show without

stars and made by a 12-person crew. It is, in fact, the biggest-budget independent feature ever made in South Australia. (Half of the budget was provided by the Australian Film Finance Corp. and the rest by the Harold Ace company of Tokyo.)

Director Andreacchio has a background in stage, screen and TV drama as well as physics and clinical psychology. Cinematogra-

Photos by Carolyn John, courtesy of Furry Feature Films



pher Roger Dowling, at age 50 already a veteran, began his film career at 17, in a film lab. The pair had teamed on other projects, including the television feature *Captain Johnno*, which won an International Emmy Award.

The film's shaggy-dog plot relates the tale of a 10-week-old golden retriever puppy, in the title role of Napoleon, who is accidentally carried far from his home

in a makeshift hot-air balloon. Stranded and alone, he is befriended by an array of Australian wild animals, most of whom aid him as he tries to make his way back home. The exception is the villain, a vicious feral cat. In supporting roles are a galah (an Australian cockatoo with a roseate underside), a family of dingos, a frill-necked lizard, a wombat, a kookaburra, an eight-foot goanna lizard, a koala, an echidna, a kangaroo, a frog, a variety of dangerous snakes, and other native animals.

Although there were no big-name celebrities with correspondingly immense egos, the actors definitely set the pace of the production. As Bourchier says, "We opted for a long shoot to allow the animals to tell the story, rather than forcing them to perform within a set time frame." Principal photography was scheduled for 28 weeks in Tasmania, Queensland, New South Wales, South Australia

Above: *Finding it impossible to train one puppy to perform properly in Napoleon*, director Andreacchio (holding dog) and cinematographer Roger Dowling (behind camera) used 52 different animals and documentary techniques over 28 weeks of shooting. **Left:** A frill-necked lizard is only one of the creatures to help Napoleon find his way home.



FILM PRODUCTION

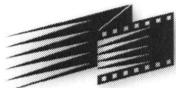
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"There's a myth that you should never work with animals or children," Andreacchio says, "but it's only true if you expect them to behave the same as adult actors. The trouble with using animals is that you have no control over them. We used puppies, which you can't train. We went through 52 puppies! Most of the native Australian animals are untrainable as well. If instead you realize that these are animals and that you have to treat them differently and approach it on their terms, it becomes relatively easy. Once you make that mental leap you can become very creative."

"When we proposed the idea to the investors, we had to have a screenplay, and we wrote all the action. They said, 'You want a frog to do what? You want an echidna to do what?'" Andreacchio helped to convince the film's backers by explaining that he would make the production flexible enough to work around the animals.

"What we were going for was a very natural behavior among the animals, but in a formal, cinematic style — just a small order for Roger," he laughs. "That's quite a difficult combination because it's almost a documentary form of observation of the animals. It became almost like trying to film an improvised scene between actors, where you have an idea as to what they're going to do but you aren't sure they will do it or that they'll ever repeat it."

"So we would go in with a story objective and then we would let them go at it. As they would interact and start to create their own actions, we would film them. Then we'd say, 'What we need is another little shot of this bit and that bit.' Then we could change the story a little to incorporate these extra interactions."

Principal photography used 300,000 feet of 35mm film, partly because the star was a young puppy. "I could only use the puppy for three weeks, then it would be too big," the director explains. "We needed identical puppies in groups of three or four because they sleep a lot. When doing a scene we'd try it with the puppy

whose character best suited that scene. One might have a timid character, another would be very excitable, another would be bold, and another would occasionally sit still. We usually needed a combination of those qualities to create the character."

"After three weeks we'd have to get another batch in. We had a sophisticated program with almost every golden retriever breeder in Australia to get dogs at the right age — that's why we went through 52 dogs. For one forest scene alone, there were eight dogs. We had to use a lot of tricks just to make the dogs match, let alone trying to make the sequence work while telling the story. It was quite a discipline."

"With an actor you can say, 'I want you to come in, go over to the table, turn around and smile.' With an animal you say, 'Come in, come in, come in,' and he'll come through the door but he doesn't go straight to the table. He goes around the chair instead and does a really interesting piece of action and you've got to think, 'That's really good, how can we make it work?' Then you construct the next thing to make the sequence flow dramatically, yet you can't cut the scene short where you don't have enough shots. You've got to break the scene down closely into very small micro units and then very small micro bits of action."

In a sequence in which Napoleon saves a small dog and takes him into a cave, "the rushes came back and we needed another angle to make the action work, so we all went out and shot some more and came back to check another bit — just backward and forward all the time. It's a bit like animation in many ways, or dealing with water or other uncontrollable elements. When we first started, we circled preferred takes, but it quickly became apparent that what we would evaluate as a print take-out on location wasn't always what suited the material."

Also starring in *Napoleon* is the Australian landscape, from snowy mountains to cane fields to desert. Much of the film was shot in South Australia, with locations including the Adelaide Hills,

snow-covered Mt. Thebaron, and the unusual desert rock formations of Flinders Range.

Director of photography Dowling operated throughout the production. "I like to operate," he declares. "On a film like this it is almost essential that Mario knows exactly what he's getting. Because we've worked so well together before, each of us has a good understanding of how the other interprets scenes. By operating I could advise him on how the animals were performing and which takes I thought were preferred ones."

Dowling brought two 35mm cameras on the expedition, an Arriflex BL4 and an Arri 3. "Initially, the concept was that the BL, being a silent camera, wouldn't interfere with the animals," he says. "In actual fact we became noisier behind the camera than in front of it. There were many times when I had a little crew behind the camera making a lot of cacophonous sound effects to attract the dog's attention, so the initial concept of having a silent camera went out the

window after a while.

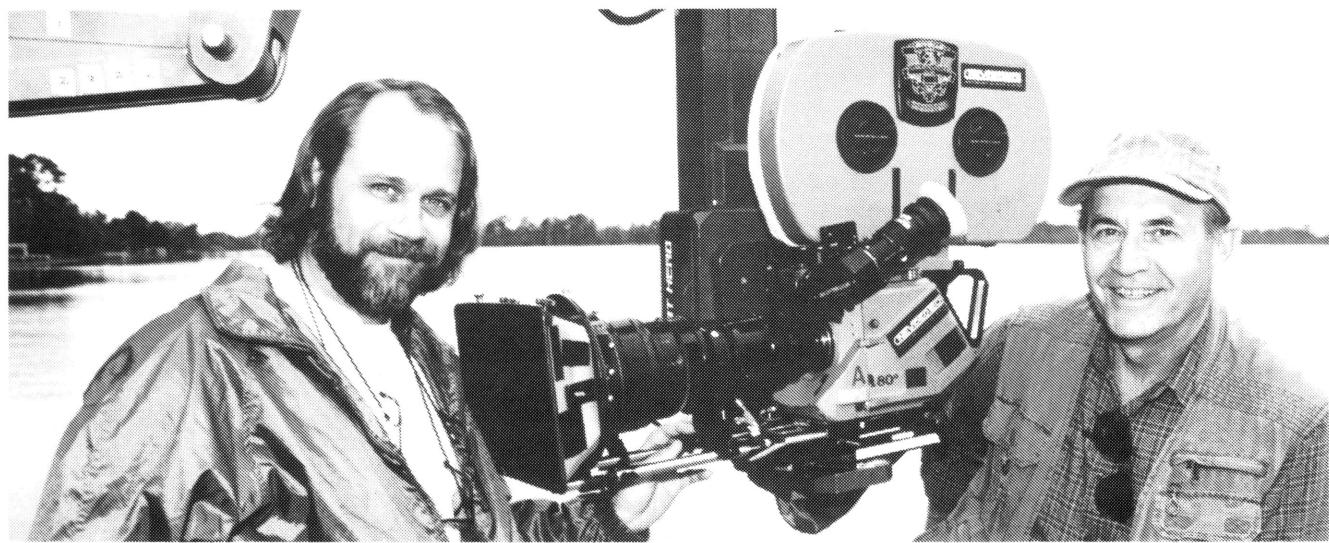
"In preproduction we thought a zoom lens would be advantageous; since we couldn't know exactly where the animal would end up, we wanted to be able to change the frame size quickly. This didn't prove as effective as we thought and we ended up shooting the majority of the film with prime lenses. The focusing and accuracy of primes gave us an edge in all our night photography.

"We worked with Kodak 5293 for the entire film. Originally we were very keen to use 5248, which is an industry standard because of the good quality of the image, but we were concerned with depth of field, which is a very big problem when working with the animals. After running some emulsion tests here in Adelaide, we were very happy to go for the 93, which would mean better depth of field. This proved to be a bonus for us throughout the shoot, particularly in the close-ups. We've now been assured that the quality we can get in a one-light workprint will be release-print quality, in-

cluding optics."

Unlike many wildlife films, *Napoleon* made only minimal use of long lenses. "Right from the beginning in planning the film Mario wanted to be close to the animals," Dowling explains. "If you're filming wildlife, often the only way you can is by sitting back and working with a long lens. We did carry a Canon 300-600mm lens with us. In the movie there are one or two shots where we wanted specifically to get the long-lens feel, but a lot of the film was shot on 25mm, 32mm and 40mm lenses. Even when we're tracking and panning with them, we're fairly close to them, so that gave a very nice perspective feel to the film. A lot of it is shot from very low angles, down on the ground with the animals, which is why there was a joke towards the end of production that our grip was like a mole, always digging little holes for us to bury the camera into the ground.

"There is a lot of diopter work in the close-ups," Dowling adds. "We used a 50 or an 85 with



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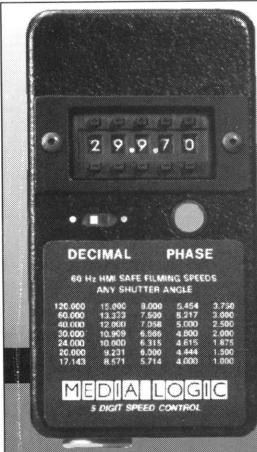
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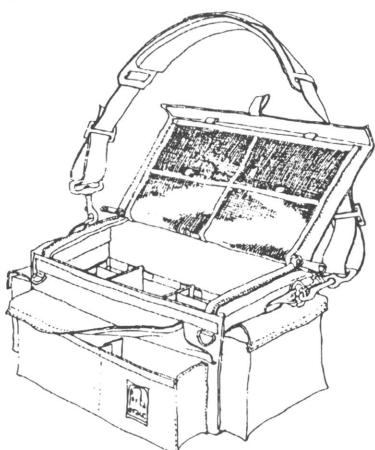
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a diopter to get the big head shots of the puppy. Our focus puller, Johnny Foster, really had his work cut out because there's no way to keep a dog's head perfectly still. On many of the closeups we would shoot at 30 fps just to take the edge off his sharp head turns, and to slow him down a little."

The team was also creative in working around the scaled-down crew. "We didn't have a resident gaffer as such. We decided that on location we would use reflector boards as much as possible, because the light is very good out there through the summer. We had a gaffer for our big night shots and in the studio sets only. For about 60 percent of the film we relied on available light, whether that meant a rather strong summer sunlight or in the open shade in a lot of the forest sequences. I like to use available light, and this was a good opportunity to exercise that technique and also save the cost of having a gaffer with us all the time; supplying him with a generator truck would also have caused a budgetary problem. We carried a two-and-a-half power light with us that we could fire up on the small 5K VA generator, and that would give us the basic equivalent of our 4K HMI without the same spread, because the fresnel's much bigger on a 4K. But it would give us a punch or an edge, and if the light got really flat we could add that little bit of a sparkle. Also, it was a lamp that we could manage ourselves and cart about to some of the awkward locations we worked in."

Two pieces of equipment were created specifically for *Napoleon*. One is the so-called "flying fox," which was designed by John Smith to simulate POV flying effects for the galah. "Basically it's two strands of nylon cord that we can run out to 300 or 400 yards, and it has a little buggy underneath that we put the camera on," according to Dowling.

"The other device we had manufactured," he continues, "was a lightweight crane that took about an hour to assemble. It would operate off a small tripod head and it gave us an arm span of about 30 feet. It was like a jib arm but much longer. We found many uses for

this. We put the camera in a cradle at the end, and we could swing a large arc and simulate the bird's flight path coming in to land and stop it precisely. We also found it invaluable for holding the hot-air balloon in mid-air to simulate flight; with this arm we could elevate the basket of the balloon with the real puppy in the basket. Also, we could move the end of the arm up and down and simulate a floating motion."

A more complicated effect required depicting our hero's return voyage, bouncing home in the pouch of a kangaroo, without endangering the dog — not to mention annoying an animal who could easily punt an adult a fair distance. "We wanted to use bluescreen, but labs in this country don't process the bluescreen," Andreacchio explains. "We found some people in New Zealand who do. We shot the bluescreen dog in the studio. I think it's one of the shots in the film. We used a lot of the techniques of dramatic films, because we weren't trying to make a documentary. That's why we didn't shy away from using all the tools that tell a story, including opticals."

The isolation of Australia, Dowling believes, is both a handicap and a blessing for the filmmaker. "If there's one thing that we do miss, it's the ability to be able to communicate with peers, fellow photographers or directors, and we often feel that in America it must afford those working there a great opportunity. But here another director and cinematographer can shoot a film tomorrow on the same subject and it'll look different, and I think that's what makes our industry unique."

Since our discussions in Adelaide, *Napoleon* has been completed and edited to 87 minutes. The cost increased by \$2 million (Australian) with postproduction work. There is a full orchestral score and human voices for the animals in, as Andreacchio laughingly noted, "three languages: English, Japanese and Australian." The gala premiere in Tokyo was a big success, and the film has opened in 87 Japanese theaters. The Samuel Goldwyn Company has obtained rights for the North American release.

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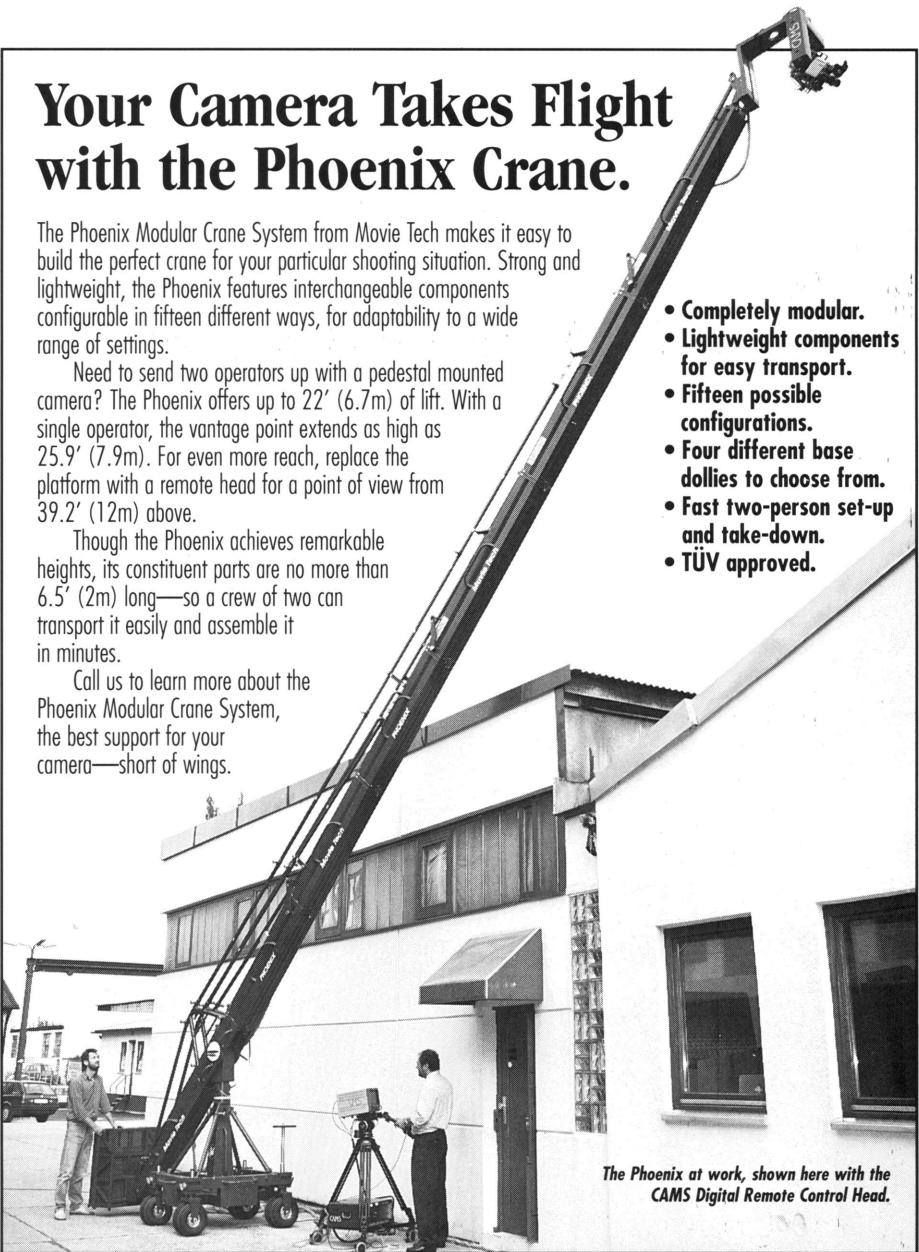
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Diving Deep In *Crimson Tide*

Augmented by digital wizardry, traditional and innovative effects techniques float the boats in this submarine thriller.

by Ron Magid

The Trident-class nuclear submarine *U.S.S. Alabama* is being stalked. Somewhere out in the murky ocean depths lurks a Russian Akula-class attack submarine bent on its destruction. Like the John Ford classic *The Lost Patrol*, the seamen of the *Alabama* never communicate with, and rarely glimpse, their attackers. Throughout the tense cat-and-mouse game, the Russian sub's motivations remain a disturbing mystery, but if its crew succeeds, nuclear annihilation will follow.

The film is *Crimson Tide*, directed by Tony Scott, but it's no *Top Gun* at 20,000 leagues under the sea; Scott chose to tell this claustrophobic tale without the wild camera moves that characterized his airborne hit. Instead, he enlisted Dream Quest Images' vast crew of techno-wizards, including visual effects supervisor Hoyt Yeatman (who shared an Oscar for creating many of the spectacular submarine sequences for *The Abyss*), to make *Crimson Tide* as unrelievedly tense as possible.

Before they began plumbing the depths, Dream Quest first mined the video store, looking for such undersea fare as *Das Boot* and *The Hunt for Red October*, as well as any archival footage of the real thing, which proved much harder to locate. "Getting our hands on real submarine footage was difficult, since *Crimson Tide* got absolutely no cooperation from the U.S. Navy," Yeatman sighs. "We tried to get as much film reference of real subs and torpedoes as we could, but a lot of the World War II footage turned out to be shots of ex-movie props; we found only a couple of glimpses of what appeared to be real subs, and for the most part you could only see down a third of their length. We knew we couldn't make a movie where the subs looked like that; it'd be very

boring, so we had to push believability."

That's when Dream Quest's art department hit the drawing boards, to reconcile Scott's vision with the reality of underwater photography, and to give their effects realism and style. Meanwhile, model shop supervisor David Goldberg designed blueprints for both the *Alabama* and Akula subs in the computer, which became the basis for his miniatures and for the CG models. Soon his model crew was busily constructing a fleet of five miniature subs, three *Alabamas* and two *Akulas*, for use in Dream Quest's gantry motion-control stage.

The model crew quickly turned the $\frac{1}{96}$ -scale Akula out of wood, and based the corresponding *Alabama* on a store-bought radio control model. The $\frac{1}{48}$ -scale *Alabama*, which was 12 feet long, and the $\frac{1}{24}$ -scale *Alabama* and Akula, measuring 24 feet and 17 feet respectively, were built using different technology than Dream Quest had previously employed. Because the models had to be very lightweight to be able to hang from the gantry, and only one model in each scale was needed, Goldberg decided to scratch-build and detail each miniature individually, rather than making molds and pulling castings. The entire length of each hull was formed of laser-cut plexiglass rings supported by an aluminum pipe "keel" down the center. Next, a sheet of ultra-thin styrene plastic was vacuumed over a slightly rippled pattern (simulating the effects of expansion and contraction on the real metal hull after countless dives), then wrapped around the ribs in slices, bulkhead by bulkhead. "That way, we mimicked not only the surface characteristic but the construction of the actual sub," Goldberg states. "The ribs can be seen subtly under

the hull surface."

The curved nose and tail sections were lathed out of dense foam, detailed with surface ripples, then molded. "Lastly, we scribed, cut and installed detail into the styrene surface," Goldberg adds. "When we were done, the biggest models weighed 175 pounds, which is amazingly light."

Each sub was painted panel by panel under the supervision of Bruce McCray, who had also put the finishing touches on the subs in *The Hunt for Red October*. "The color schemes were gray and gray and gray!" Goldberg laughs. "The *Alabama* was a very dark charcoal gray, while the *Akula*, which had a lot of surface rust, was a more brownish gray to differentiate the two. Normally, we'd paint our subs lighter because they end up looking darker on film, but the smoky environment the subs were shot in had a 360-degree fill, so we found ourselves spraying them down with black to make them photograph dark enough."

In the beginning, Tony Scott hoped to film all of *Crimson Tide*'s submarine effects wet-for-wet, but wisely opted to let Yeatman shoot the subs in a dry-for-wet environment, which his crew created by filling Dream Quest's 110' x 70' gantry motion-control stage with smoke. Under those conditions, Yeatman and his effects artists could control the depth of field and do repeat motion-control passes on the miniature subs, enabling them to improve on reality. "We were better able to create the graphic look Tony wanted onstage," Yeatman confirms. "He wanted the subs to have dark underbellies and the water to have a certain color and fall off a certain way, so audiences would believe they were thousands of feet down. You're dealing with blacks and blues when you're



Denzel Washington and Gene Hackman portray submarine officers at odds in director Tony Scott's *Crimson Tide*. Primary colors and low-key lighting accentuate the U.S.S. Alabama's high-tech claustrophobia.

down in that depth. There are very few normal spectral colors coming through, so our smoke-filled environment was somewhat monochromatic. On top of that, the ships themselves were almost black, so the final result is not something you want to see at the drive-in, or even on video! Tony artistically directed a film for the big screen, and that's always been an issue for the studio, but Tony said, 'Look, we're making a movie.' It looks too dark but it's creatively, cleverly played so you can see the action."

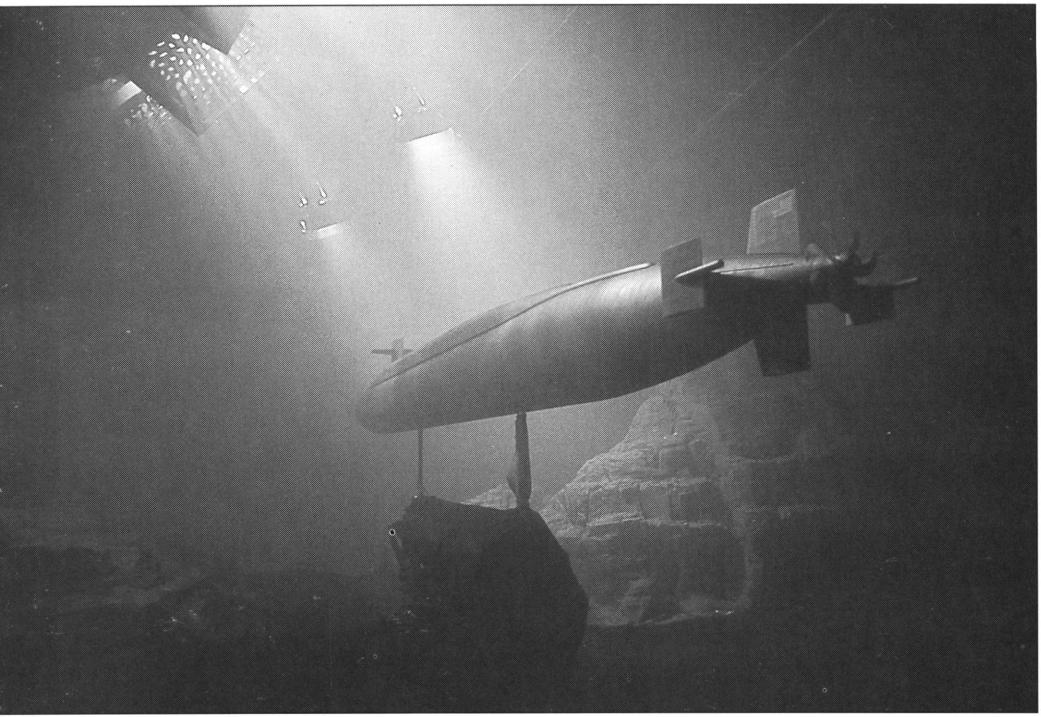
Scott also wanted Dream Quest to depict the largest underwater vistas ever seen on film, but after doing tests with the smallest $\frac{1}{6}$ -scale models, he and Yeatman concluded that they looked less like submarines than cigars! "We did some really nice illustrations depicting Tony's vision," Yeatman says, "but after doing some tests, we soon realized that if we tried to show a half-mile underwater, the submarines looked more like levitating dirigibles. Since the subs were stealthy, black and very smooth, it would've been tough to convey that the *Alabama*, in reality, is 550 feet long and 42 feet in diameter, or four stories high, if you saw

it from any distance. There isn't much detail, like hatches and ladders, to give a sense of scale. And since the propeller and other parts of the ship are classified, most people haven't seen them, so you can't tell by the size of the prop blades how big the sub is." The director opted for closer shots of the $\frac{1}{48}$ -scale *Alabama* alone, or the $\frac{1}{24}$ -scale *Alabama* and *Akula*. "At those scales, the massiveness of the subs felt much more believable," Yeatman says.

When both subs were seen in a shot, the $\frac{1}{24}$ -scale *Alabama* was floor-mounted on a pylon, while the *Akula* was hung on wires from Dream Quest's 65-foot-high overhead gantry rig. "The shots where both subs are seen together in frame at the same time were actually shot that way," Goldberg adds. "That's one of the reasons we built the models in the same scale, so we could position them on the gantry. Skip Beatty, our stage effects director of photography, usually filmed the motion-control shots featuring both subs with the 24-foot *Alabama* in the foreground on rods and the 17-foot *Akula* in the background on wires. Working with the larger scale models allowed us to build

up smoke in front of the lens, so we didn't have to smoke the room so densely, which added to the overall realism of those shots."

The dry-for-wet smoky "soup" filling the gantry stage presented its own set of challenges. One thing that helped sell the reality of the stage photography was Scott's insistence on minimal camera moves on the motion-control models. "Stylistically, we had hoped Tony would go for *Top Gun*, where the camera was always moving and felt handheld, but what he wanted was a very objective look," Yeatman recalls. "At first I didn't like that approach. I thought since we were in an aquatic environment, the camera would naturally want to float, but the more I saw the shots going together, the more I felt he was right. The whole film is claustrophobic—it takes place almost entirely inside the *Alabama*, this sub with no windows—and Tony saw the effects shots as moments where he could give the audience a break, let them out and give their eyes a rest. The camerawork consists of very slight pans, tilts and drifts. It doesn't look like a machine is shooting it, but it isn't made up of dramatic camera



drive couldn't move them anywhere near fast enough for our shots, so John Gray built an elaborate cable pull system that propelled these torpedoes at about 30 to 40 mph underwater over a 40-foot run-up and a 60-foot production run. The problem was that they didn't want to go straight, even on wires. Day after day we fought with these torpedoes, shifting their balance back and forth, but no matter what we did, they wouldn't behave as we expected them to. What it came down to was that our torpedoes simply didn't have enough fin, so we increased the fin area to the point where they would travel straight!"

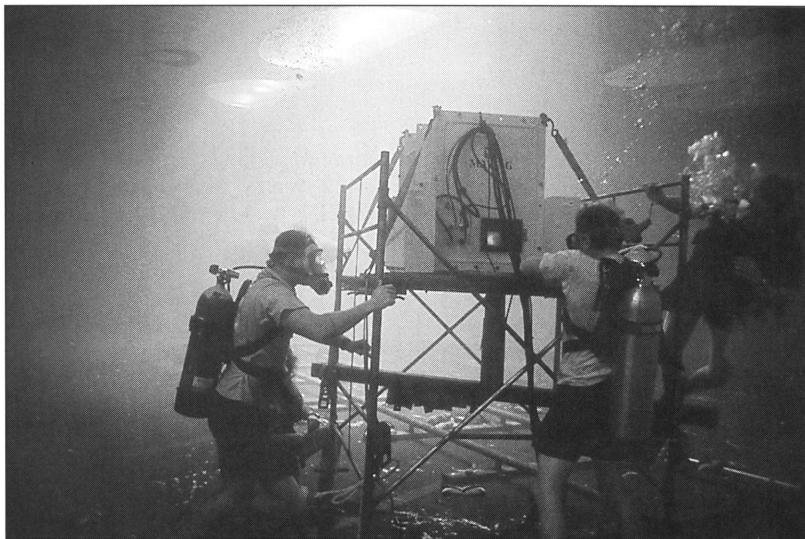
Goldberg's crew also built the front of both subs in $\frac{1}{3}$ scale so they could show the torpedo launch. Matching the water in the tank to the murkiness of the stage atmosphere was critical to the suc-

Above: Shot dry-for-wet by Dream Quest on their smoke-filled stage, the $\frac{1}{24}$ -scale (24-foot) U.S.S. Alabama is pylon-mounted for a hostile encounter with its (17-foot) Akula-class Russian nemesis—which will hang from the 65-foot-high motion control gantry above. **Right:** The implosion-fated 20-foot Akula model, mounted to a track on the tank floor, is readied for one of Tide's few wet-for-wet shots. In the foreground is one of two 300 frame-per-second, waterproof cameras which will capture the unique blast.

booms and dollies."

While Yeatman found that the dry-for-wet tools of *Crimson Tide* were essentially the same today as they were when he spearheaded the submarine effects on *The Abyss*, he had to change his lighting approach altogether. "Unlike the submersibles for *The Abyss*, these subs carried no running lights," Yeatman adds, "so it was hard to get those specular reflections that made them look like they're underwater. Here, we were dealing with stealthy black objects we had to illuminate without it looking as if they were barely 10 feet under the surface with the sun directly overhead. It would've been easier to throw up a big light and say, 'There it is,' but that would've given us a low-contrast, murky image with no creativity or interest. We wanted to create a believable deep-down environment, which was essentially black. We found that we really lit very little of the sub, it was more like lighting the 'water' around it. We found it was what we didn't light that gave us the right look. And that way, we were able to create the very graphic look Tony wanted the subs to have by contrasting their silhouettes against the water or rocks."

Despite the controllability of the dry-for-wet environment, certain effects just couldn't be cre-



ated onstage. Thus, the torpedoes fired by both the Russian and American vessels were achieved in part using wet-for-wet, not-so-miniature torpedoes (measuring 6' to 8') on guide-wires, and digital torpedoes. "Tony wanted the realism of real torpedoes in water," Goldberg says, "so we went through an extensive, excruciating process of building and firing wet-for-wet torpedoes. To that end, we built an air-powered motor that ran off a very small scuba tank into each torpedo, which drove the propeller. The air would also be ducted to the rear of the torpedo to form the bubble wake. But that air-

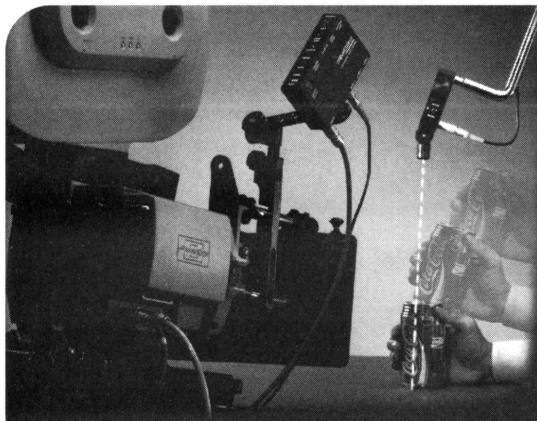
cess of the torpedo shots. "Ultimately, we decided to treat the pool much like we treated the smoke room," Yeatman says. "There, we suspended smoke or oil particles in air, so we ended up suspending tempera paint particles in the wet-for-wet environment, which worked very well. It was very controllable and non-toxic; the filters cleansed the water daily, so we could pull out all the paint we'd put in and start fresh each day. Since we were essentially working with suspended particles in both cases, we used the same backlit tricks from our smoky stage to light the wet-for-

wet environment."

Though shots of the wet-for-wet torpedoes were considerably more animated than those of the dry-for-wet subs, Scott still insisted on avoiding any contrivance in the tank photography. "We took the *Top Gun* approach for some of the torpedo footage," Yeatman says with satisfaction. "We used long lenses, quick cuts, and tight action to give the emotional energy Tony wanted, but we never put our camera on the back of a torpedo; Tony thought that was totally artificial. The shots look more like we had cameramen on the bottom of the ocean, shooting with long lenses, trying to capture the action as the torpedoes raced by. And that's exactly what we did: we ran these $\frac{1}{3}$ -scale, 6- and 8-foot-long torpedoes at about 30 mph by guys using cameras with long lenses. All of them had experience shooting sporting events."

The torpedo miniatures worked great when the trajectory was a straight line, but CG torpedoes were required for long shots showing the position of the torpedo relative to the enemy sub. However, a number of issues had to be resolved to make the digital weapons believable as they honed in on a sub or were deflected by countermeasures. "We didn't want to make the torpedoes go too fast, because they'd begin to look almost airborne," Yeatman says. "But at the same time, we wanted to build an exciting sequence, so we were always trying to go faster and faster. Then there's the scale issue: a torpedo is 19 feet long, but relative to an Akula or an *Alabama* it's extremely small, so we were definitely pushing reality by showing the torpedo travelling several hundred feet toward the sub amidst a large expanse of sea. In real life, we'd definitely lose the torpedo within the first 200 feet, so we had to be careful it didn't look artificial."

To ensure that the digital effects looked absolutely authentic, computer graphics supervisor Dan DeLueew wrote a computer program at the outset which enabled Dream Quest's CG department to import stage motion-control data into their 3-D software. "That way, I could re-create the moves of Dave



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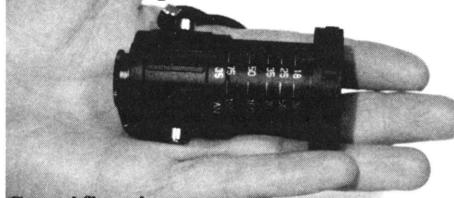
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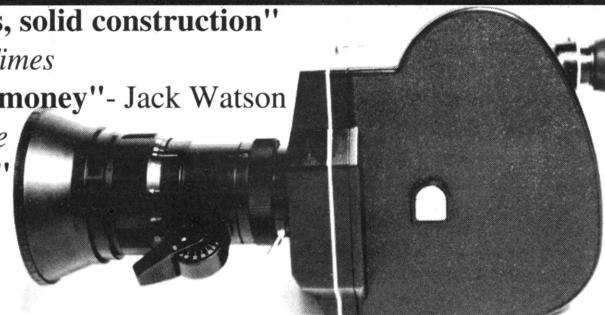
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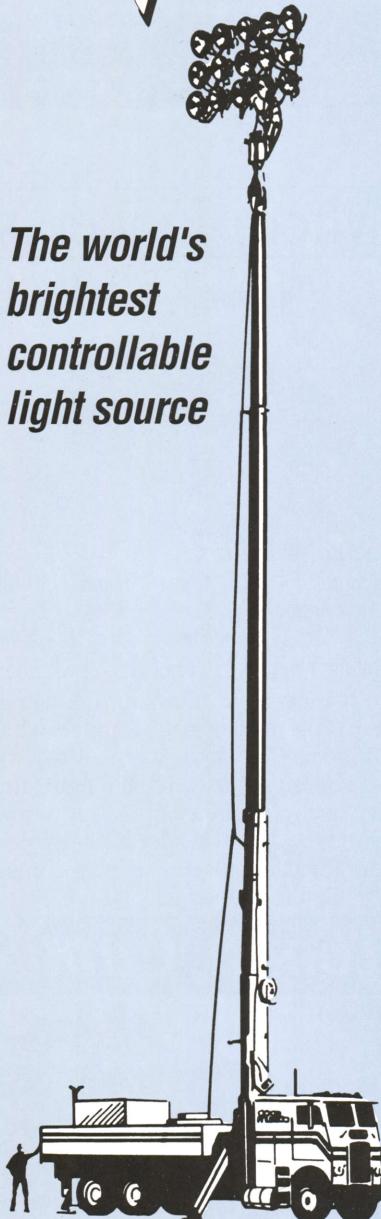
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Goldberg's models and use them as placeholders in my 3-D environment, through which I could run our torpedoes and other CG effects," DeLueew says. "The CG torpedoes were modelled directly on the blueprints Dave Goldberg made for his $\frac{1}{3}$ -scale wet-for-wet models, so they matched exactly."

Their movements were modelled on that of two-foot-long lightweight wooden miniature torpedoes sling-shot along a 100-foot cable stretched out behind the Dream Quest facility, photographed by one of the wet-for-wet cameramen using a long lens. Using this technique, Dream Quest created live reference footage for their CG animators to copy in the digital realm. "That way, we could help the digital people create the move by organically composing the frame and doing the action," says Yeatman. "We spaced little crosshairs behind the wire, which passed through frame as the cameramen panned along with the torpedo. By documenting the spacing of the crosshairs and their distance from camera, and knowing the frame rate we were shooting, we could extrapolate the move in CG, including the handheld camera shake, which added a documentary feel to these digital effects."

All of Dream Quest's stage, wet-for-wet and CG elements were digitally composited. The tricky part was converging the computer effects into the dry-for-wet murk so that they'd look as if they were actually part of the scene. Appropriately, DeLueew and company used varying layers of CG fog to seamlessly blend them in. "Onstage, the fog fades off at a fixed rate, so we were locked into that when we planned these shots out," DeLueew reports. "The torpedo had to be in a certain amount of fog to fit in the scene, so we had to correlate how those different fogs would work between CG and stage. We cheated that in two ways. The first was by rendering the torpedoes along with an environmental fog based on a linear grade-off that was close to the color of the onstage smoke, which we could matte in along with the torpedo. When the linear technique didn't work, we cheated by putting several CG lights that emit fog in

back of each other to control the grade-off so it matched the stage background plate."

Almost every dry-for-wet stage shot required the addition of subtle effects into the smoky soup behind each sub. The classified secret behind the propeller design on the real-life submarines is the anti-cavitation effectiveness of the blades, which ensures that the propellers' movements are undetectable. "If the props emitted bubbles, that would mean they could be heard in the water," DeLueew explains, "so we had to come up with some kind of an effect that would convey that the sub was in water without crossing the line by showing bubbles coming off the back. Instead, we decided that the wakes behind the ships should look more like a change in water pressure rather than bubbles. They're basically a little 'swish' moving through the environment which we rendered as clouds or spheres in CG. Once we defined turbulence as little particles floating in water, when we let the sub travel through that turbulence, the particles flowed over it like the wind over cars in a wind tunnel test. As these particles streamed off the back of each sub, we rendered them as black and white images, then used that as a displacement map to distort the image and make it look as if there was a churning area of higher pressure in the water. That wake created a refractive effect to the back of the submarine, which made it look exactly as if it was underwater."

Rounding out *Crimson Tide* is one of the most challenging effects Dream Quest has ever attempted: the climactic implosion-explosion of the Russian Akula submarine, which takes place *underwater*. Amazingly, this effect was entirely practical in its execution. Goldberg's modelmakers built three $\frac{1}{20}$ -scale wet-for-wet Akulas, using thin lead skins stretched over aluminum skeletons which contained a series of six large vacuum belljars. When the explosion went off, the belljars created a powerful vacuum, causing the sub to implode. Achieving the illusion of a torpedo hitting the sub, the initial implosion and the fireball splitting the hull required

some deft choreography. "It turned out that there were 11 different events taking place at radically different speeds," Yeatman says. "We only had three subs, so we wanted to be assured it was going to work. We built a simple CG Akula, then loaded the information about the number of frames each explosive event lasted into the CG environment, which allowed Tony to have input on the detonation sequence."

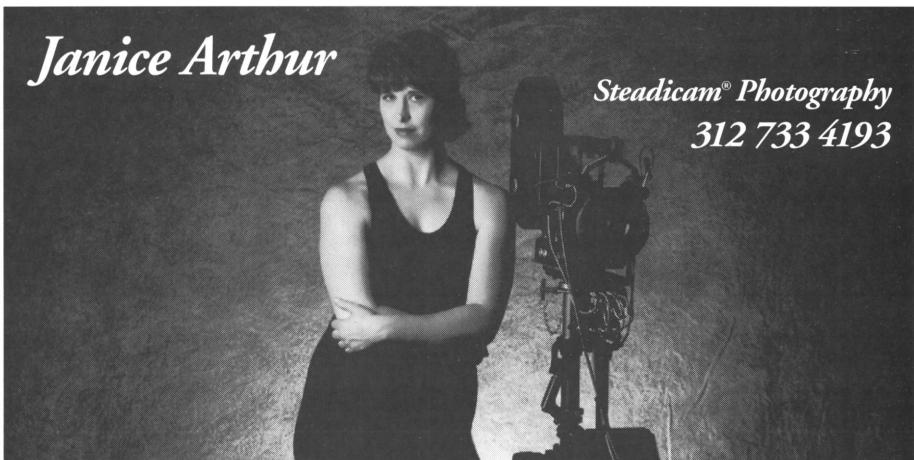
As planned, the entire explosion-implosion would take six seconds of screen time. "However," Yeatman says, "when we extrapolated back to figure out the timings of the real-time explosions, we realized that all 11 events occurred in a quarter of a second! To accurately choreograph these events, we timed every explosion down to the last millisecond. Then Fred Iguchi, head of Dream Quest engineering, built a simple system using a microprocessor and a series of heavy-duty latching relays; once the timings were entered into the computer, it would play them back in real-time and all the events would go off at the appropriate millisecond during that quarter-second explosion!"

Dream Quest tethered their 20-foot Akula model to a cart running on a 60-foot-long track on the tank floor, which was tied with an endless cable to a giant dolly on a duplicate track on the surface. As eight grips pushed the cart, it synchronously moved the Akula submarine below, which floated 6 feet off the bottom like a lead balloon, with another 10 feet of water above it as two high-speed 300 frame-per-second cameras rolled in waterproof boxes. When the sub hit a certain mark, it triggered a microswitch which cued the computer to begin its detonation sequence. "In the first quarter-second, after the computer fired all the explosions and the vacuum jars were detonated," Yeatman recalls, "the model went from about 500 pounds buoyant to about a thousand pounds negative and nosedived into the floor of the pool! Then there was an immense shockwave that blew water about 12 feet in the air, destroying half the Par lights illuminating the model. But by that time, the shot was over! The underwater explo-

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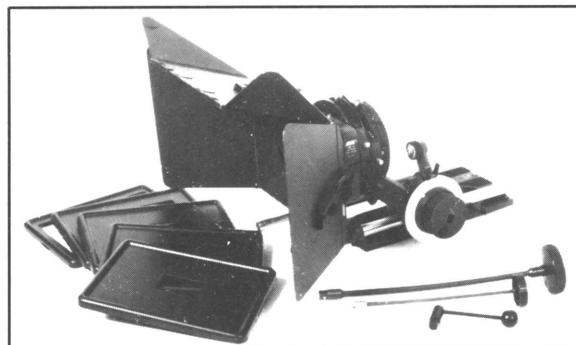
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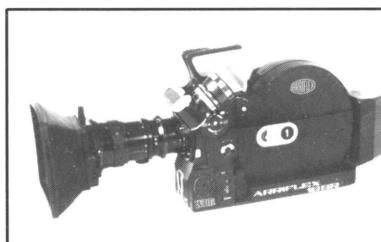
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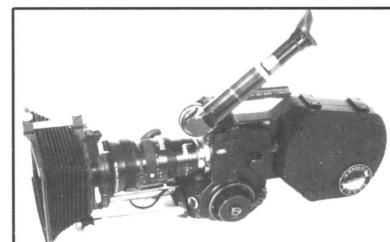
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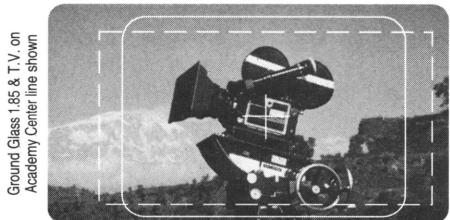
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sions had a radically different look than anything you've ever seen: the pressure created very interesting spherical explosions that blew outward until they reach their apex, then immediately imploded inward, which gave us these tremendous stormy underwater explosions."

After the Akula implodes, the *Alabama* tries to escape as the Akula's nuclear reactor goes up in a blinding flash of white light. This explosion is followed by an enormous shockwave of water that races towards the American sub, which rocks violently as it is engulfed, then shoots forward and hits camera. As the camera shakes in the aftermath, Dream Quest is betting that no one will be thinking it was a CG effect, and a backwards one at that. Says DeLueew, "We took the same approach to the shockwave that we used for the turbulence wakes behind the submarines. In this case, I put a large number of particles behind the camera, changed their gravity and let them drop past the sub. As those particles moved through the turbulence, it created a powerful wave of water, and when they hit the sub, they wrapped around it, collided with it and rolled back over it, heading *towards* infinity where the Akula exploded. Then I saved those images out, rendered them and played them in reverse."

Working on *Crimson Tide* convinced Yeatman and his Dream Quest Images team that the magic of digital effects is its ability to mix old and new technologies. "This film had everything from traditional model photography and motion control to fairly complex digital work that was, for the most part, replicating nature, which is probably the hardest thing to do," he observes. "But the most enjoyable stuff was the practical effects — shooting large, really operating torpedoes out of torpedo tubes underwater, and blowing up the Akula. There's something magical about setting it up, lighting it and looking at it through the lens. But this film proves that these days, the smart way to go is to use the best tools in combination to make the images."

The Astonishing Images of *I Am Cuba*

Daring photography and lyrical style enhance 1964 agitprop epic, which stands as a record of the island's dashed dreams.

by George Turner



Films of propaganda, more than any other kind, mirror the moments of their creation. They can be inspiring or irritating, artistic or klutzy, preachy or subtle. A few take on lives of their own, making it possible to appreciate them for values that transcend their agendas. So it is with certain films made solely to glorify the Bolshevik Revolution, such as *Battleship Potemkin* and *October*. Even the Hitler-sponsored *Triumph of the Will* is now admired as a *meisterwerk* of German craftsmanship.

Now we can add to the list *I Am Cuba*. Co-produced by Mosfilm, the largest studio in the USSR, and the Cuban Film Institute (ICIAC) with a budget of \$600,000, it went into preparation in November 1962, only weeks after the Cuban missile

crisis almost triggered World War III and a year after America's disastrous Bay of Pigs invasion. It was the fifth year of Fidel Castro's reign, following his hard-won overthrow of the tyrannical government of Fulgencio Batista, and the dream of Utopia to come had not yet been obliterated by the grim realities of life under the new regime. In the film, Castro is the savior of his people, Communism is the hope of the world, and bloated American capitalists are helping Batista to rape the island.

By 1964, when the picture (*Soy Cuba* in Cuba and *Ja Kuba* in the USSR) was completed, the country's dreams had eroded further. The horrors of Batista and the Mafia seemed no worse than the realities of Castro and the USSR. Any movie which

In one of the film's many breathtaking sequences, Maria (Luz María Collazo), wearing her precious crucifix, wends through the shadowy, prisonlike recesses of an American nightclub.



A study in contrast: Maria and her fiancé stand in front of the gleaming white church where they are to be married.

sets out to combine the frigid austerity of Eastern Communism and the hot-blooded sensuality of the tropical West is bound to be something strange, and *I Am Cuba* was not palatable to either Castro or Khrushchev.

What makes this flop of its day something for the ages is not its demolished "message" but its inventive black & white cinematography. Its visuals are as startling today as were those of *Citizen Kane* 55 years ago. Soviet director Mikhail Kalatozov (1903-1973), famed for his lyrical *The Cranes are Flying*, and director of photography Sergei Urusevsky were determined to create a work of modern art composed of seemingly impossible camera moves. The result is 140 minutes of determinedly different images, including exceedingly long takes through which the camera roams constantly. While the picture is too long to fully sustain such a cascade of virtuosity and there are times when it becomes too arty for its own good, it is undeniably a feast for the eyes. Taking ourselves as the heavies and Castro as the Lone Ranger requires more than a grain of salt, but the visuals are worth it.

The screenplay, by Russian poet Yevgeny Yevtushenko and Cuban novelist Enrique Pineda Barnet, portrays the last gasps of Batista's reign in 1959. It consists of four segments, which are linked by poetry read in Spanish by the "Voice of Cuba," Raquel Revuelta, and echoed by Russian translators. In the new prints dialogue is translated (loosely) in English subtitles.

The first story tells of the lovely Maria, forced by circumstance to be a prostitute in a Havana nightclub catering to boorish Americans. A customer with a strange fetish steals her crucifix and causes her double life to be revealed to her fiancé. The second tale is of a peasant whose cane farm is sold by the landowner to United Fruit Co. just at harvest time. He gives his teenaged son and daughter his last peso and sends them to the village. While they happily drink Cokes and play tunes on a jukebox, he slashes crazily at the cane until he is exhausted, sets fire to the field and his shack, then collapses and dies. A long third segment concerns a student revolutionary who reneges on his determination to assassinate a corrupt police officer and eventually is murdered by the man whose life he spared. The last episode concerns freedom fighters in the Sierra Maestra as they vengefully surge to victory after Batista's

bombers have destroyed their homes.

Heralding the striking black & white images to come is a surreal title sequence photographed from a helicopter which approaches Cuba over a sullen ocean and passes over the island. The masses of palm fronds appear silvery white, like glowing feathers reaching into a dark sky, and bodies of water resemble pools of molten lead. Beauty and foreboding are conveyed in about equal measure. Next, a long take moves down a narrow waterway through an impoverished village.

There follows the most impressive camera move of the film. On the roof of a high-rise building, a rock 'n' roll trio blares as the camera strolls with contestants in a bikini beauty contest through a boisterous crowd of mostly hefty tourists. The camera moves to the edge of the roof and glides down the side of the building to a swimming pool level swarming with cocktail drinkers, sunbathers, gorgeous women and even a tourist photographing the scene with his Bolex. The camera swerves to glance down from a terrace overlooking the beach, then turns its attention to a tall, bikini-clad brunette as she rises from a chaise lounge and walks into the swimming pool. The camera follows, plunging beneath the surface to show a mosaic of the swimming bodies of young women, fat capitalists and stringy pimps. The sound also goes underwater, yielding a muffled, distorted version of the revelries above.

It should be emphasized that this entire sequence is accomplished in one continuous, unhurried take! The desired ambience of Dante's Inferno is

achieved, although fat capitalists might suspect that it looks more inviting than the prospect of tilling your own soil, as proffered by Castro.

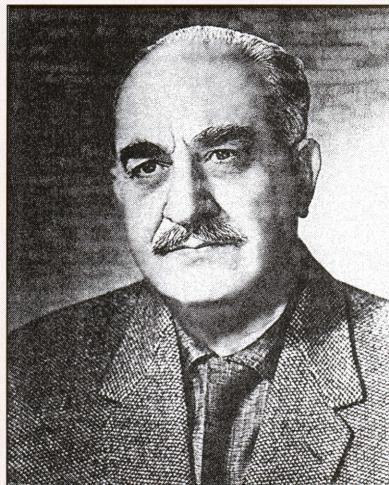
All of the scenes that follow are just as deliriously unconventional. There are more German tilts than could be found in a Karl Freund film festival, wide-angle distortions that would have startled Orson Welles, and low-slanted camera angles that give Herculean stature to heroic revolutionaries in the tradition of the Russian classics directed by Sergei Eisenstein and photographed by Edouard Tissé. There are many unusually long handheld scenes through which the camera meanders intricately as an angry and sometimes agitated observer. The camera repeatedly challenges danger, convention, and even the laws of gravity.

Director of photography Urusevsky (1908-1974), a graduate of the Institute of Fine Arts in Moscow, was a fine painter and photographer who was a combat cameraman during World War II and later became one of the great pictorial stylists in Soviet films. In 1965 he wrote of his Cuban experiences in the *Iskusstvo kino* magazine:

"We saw the film as a kind of poem, as a poetic narrative. I'm not saying that this is how it actually turned out! . . . What did seem absolutely necessary to us was the creation of an image — to the point of hyperbole. . . We tried to get to the point where the viewer would not be just a passive observer of events happening on the screen but would experience them with the actor. . . I as a cameraman always wanted to do more than simply fixate what was happening in front of the camera. I am interested in getting the basic theme of the scene: love, loathing, misery, joy, despair.

"Rhythm is the key. Obviously when the cameraman is running alongside the heroes, first close to them, then approaching them again — peering into the face of one, then another, stumbling into trees, falling down — the panorama cannot be and ought not to be even. This technical 'failing' is in fact an artistic virtue. . . Whatever episode we film, whatever camera we use, the vital condition is an inner agitation, a creative emotion during the filming — I even dare say inspiration.

"Using a handheld camera gives you the opportunity of making free, complicated panoramic pans which are impossible with a stationary camera with the usual cart on its tracks. This is not to say that I am agitating for every film to be shot with a manual camera. But when we tried shooting *I Am Cuba* with a stationary camera and tripod, it just didn't work — it was as if our hands dropped down by our sides. . . If I move forward a bit, holding the



camera in my hands, or back a bit, or shake the camera from side to side, the image becomes more expressive and more alive.

"It seems to us that you do not have to show the viewer literally everything. . . There is always something that ought to be left unspoken. You have to give the viewer the chance to be more active, to figure out something for himself, to connect the dots. . . We decided to solve the social issue by way of association. Take the beginning of the film: before the subtitles you already have the long pan along the

shore, over the palm trees. We wanted to show the long island, which we are approaching more and more slowly. . . After the titles there is a pan over a poverty-stricken village. Black sky, white palms. The whole pan was shot from a boat. In the foreground you have a black boatman. The whole pan is shot around him — you see first his back, then his legs. (By the way, this pan was shot using a 9.8mm lens. The possibility of this lens still amazes me.) I am convinced that the impression of poverty is not created so much by the poor village itself that we are passing by as by this boatman, whose bare back and legs we constantly see. . . At the end, the camera comes to a black woman with naked children crossing the river. . . In the next sequence, taking the camera into the pool is justified because water is the visual link between the two scenes." [Evidently the Russian meaning of "pan" differs from ours; throughout this long scene the camera rides behind the boatman.]

Alexander Calzatti, the first camera operator throughout production, is the son of a famous cinematographer, was a student of the legendary

Above: *Youthful camera operator Alexander Calzatti on the set.* Left: A portrait shot of *I Am Cuba* director *Mikhail Kalatozov.*



Above:
Oblivious to the problems of their cane-farming father, Pedro, a pair of teens (Luisa María Jiménez and Mario González) happily play tunes on a jukebox. Below right: Betrayed by a mercenary landowner, Pedro (José Gallardo) angrily attacks a crop of sugar cane. In the movie, infrared film makes the cane appear a glaring white.

Tissé, and served as an intern on Kalatazov's *The Cranes are Flying* in 1957. For the past 12 years Calzatti has lived in Los Angeles, where he photographs music videos and second units. His son is also a cinematographer and his daughter is a fashion photographer. His father, now 90, also lives in Los Angeles.

"I was 22 years old [when we filmed *I Am Cuba*]," Calzatti recalled recently during a visit to the ASC clubhouse. "We delivered equipment to Cuba, and Cuba gave us hotels, transportation, food and many things. We gave Cuba 20 small Vassilev cameras that were a strange combination of Eclair and Arriflex, and a camera named Friendship that was much like a BNC with reflex. This camera was never used in Cuba because the motor works on 50 cycles and Cuba uses 60 cycles. They tried to make a device to compensate, but it never worked."

A small camera with a 400-foot capacity was used throughout because of the preponderance of handheld work. Two cranes were brought from Russia for certain scenes. Everything was filmed MOS and the dialogue was post-synched. An excellent score for orchestra and voices by Cuban composer Carlow Farinas was recorded in Russia.

"*Soy Cuba* was probably the first big-budget picture made with just one camera, an Eclair CM3 Camiflex, and mostly one lens," Calzatti laughed. "We changed lenses very rarely, from super-wide to just wide. We used a 9.8mm Kinoptic for 90 percent of the film, and the other lens was just an 18mm, which we used like a normal or maybe a short telephoto. We had a lot of problems with the small French motor because anytime we tilted the horizon the camera changed speed! A specially trained Cuban technician followed his instincts and fixed it. There were no special effects except what was done in front of the camera. Everything was hand-made, garage-style. Mr. Urusevsky always

liked to make everything himself, but he was getting old and the tropical climate was hard on him, so he decided to use a team operation. We tried to use the camera like basketball players, with somebody beginning the scene and passing the camera to another."

Calzatti told of spending long nights with Urusevsky discussing ways of achieving his ideas. "He was a painter, an absolutely artistic person, but his technical knowledge was zero," Calzatti explained. "So he'd just ask me to give him something, like combinations of filters, camera supports, or doing some kinetical movement for the camera. We built with him some 83 systems. If you look carefully there are maybe 100 splices in the film because of many long scenes — the camera edited many things. The camera changed points of view from subjective point of view to objective many times. Point of view was a major target of what we wanted to do."

The bikini contest scene is the most striking example of this technique. "We filmed it on a very tall building with two roof levels. We built a primitive wooden elevator which was just lowered by hand. My assistant was an ingenious mechanic, Konstantin Shipov, and we had a Cuban named Caliche who was a genius. Somebody stayed in the elevator, the first operator gave him the camera, he went down and the third guy took the camera through the lower level and the pool. The camera could go into the water because we had it in a plastic bag from the supermarket."

Infrared film, which records only that part of the spectrum beyond the visual red, was needed



Gloria (Celia Rodriguez) is accosted by a group of drunken American sailors, who stretch the scene's credibility by singing a macho song in perfect harmony.



to lend a dreamlike quality to several important scenes. Foliage reflects infrared and is recorded as white while other colors are rendered in values dissimilar to those of panchromatic film. It was used effectively, most often for day-for-night effects, in some American films beginning in the late 1930s. Memorable examples include the serial *Flash Gordon's Trip to Mars*, the big-scale Westerns *Fort Apache* and *Pursued*, and several crime dramas made by Universal in the 1950s.

Urusevsky used infrared to create the eerie effect of white palm trees, dark skies and leaden water in the title sequence and white stalks of cane in the second story. When the betrayed farmer slashes at the cane with his machete, the long leaves resemble swords attacking from all sides.

"We wanted the cane white because sugar is white — it was sugar," according to Calzatti. "Urusevsky had used infrared before. Russia didn't produce infrared film, so I came to a manufacturer in Kazan who made film strictly for the military — for shooting the other side of the moon, for spying on American objects. They hand-made infrared for us in what looked like a kitchen. It was of very high contrast and very low sensitivity — around 30 ASA — and it was on celluloid instead of tri-acetate. We had no infrared meter, and no infrared marks on the lens, so many times the results were unpredictable. After a while we just used our instincts, and we

became friends with infrared. What you see in the film is okay, but we shot much footage to select from. Each scene was done 15 or 20 times, so it never was filmed spontaneously.

"For our normal negative we used Orwo Superpan, which was East German Agfa film, ASA 64. We used lots of filters, mostly homemade black and white nets."

After the farmer sets fire to his house, a complicated crane move carries the camera up for a high angle of the scene. To permit the director to view these scenes during shooting, the crew devised a closed camera video system utilizing Urusevsky's personal television set, which he brought from Russia. This is probably the first use of what has only in recent years become common procedure.

The death of Enrique, the student revolutionary in the third story, is depicted in an eerie fashion. The camera swirls up and the image of the murdered youth seems to dissolve. A filter was used to distort the image, oil was poured over a plastic sheet in front of the lens, and a gradual fade into a negative image was done in the laboratory.

The funeral cortege of the student is shown in a single take wherein the camera rises from the street, moves up the side of a high building, crosses the street, enters a window, moves through a room where workers are making cigars, then goes out the

After watching his home reduced to a bombed-out shell, a peasant joins the rebel troops in the Sierra Maestre.



window and continues moving while observing the mourners in the street. Calzatti explained how it was done:

"We used a special cable device which I built in Moscow before going to Cuba. We planned to fly the camera between two big buildings in a major street. Because of security and insurance problems we used it in a little street. We used two cables and a small cart with eight wheels and a fork underneath where the camera was placed at the [end] of a handheld move. The secret of how we attached the camera to the cart was a magnet, part of which was in the cart and part of which was built on the camera. From the window the camera moved out about 100 feet.

"We worked sometimes 12 to 16 hours a day and stayed about two years on the island," Calzatti said. "Everybody was so enthusiastic [that] we were infected by it, and we worked very hard. Very soon after we came back to Russia, more than half of our crew died. I survived because I was very young.

"I think there is great value in this film because it could never be done again. It was very valuable to the Cubans because never was Cuba done so beautifully on the screen. It was like the Mexican films of Gabriel Figueroa — Kalatazov and Urusevsky looked at many films [shot by] Figueroa because he invented this image. This picture did for Cuba what Figueroa did for Mexico.

"It was really a cameraman's film because everything was orchestrated for the camera. I think

of my life in two parts: before this film and after, although I was never the cinematographer of this film, I was just a cameraman. Any medium — literature, poetry, architecture, painting, film — reflects the reality of life, but never the whole reality of life. The artists can choose what part of life they want reflected, so it has become a very dangerous tool for any sort of propaganda. This is what *I Am Cuba* is; it's strictly a political film."

I Am Cuba was shown briefly in Cuba and the USSR in 1964 and incurred the wrath of both Castro and Khrushchev. It wasn't released in any other countries and vanished as quickly as the expectations it offered so fervently. But after three decades an almost happy ending has come to pass. The film surfaced, without subtitles, at the 1992 Telluride (Colorado) Film Festival tribute to Kalatazov. The director lived to see its triumphant resurrection only months before his death. The following year it was shown at the San Francisco International Film Festival, where a sold-out audience gave it two standing ovations during the screening. Now, under the auspices of Francis Ford Coppola and Martin Scorsese, Milestone Film & Video have added subtitles and put it into general release.

Here is proof — if any is needed — of the immense power of motion pictures, and especially of cinematography; proof that an inspired work can transcend ideologies and stand on its own as a work of art. *

CREDITS

A joint production of Mosfilm Studios (USSR) and ICAIC (Cuba); currently a presentation of Francis Ford Coppola and Martin Scorsese; produced and directed by Mikhail Kalatazov; screenplay, Yevgeny Yevtushenko, Enrique Pineda Barnet; cinematographer, Sergei Urusevsky; camera operators, Alexander Calzatti, B. Brozhovsky; assistant cameramen, M. Orpesa, K. Shipov, M. A. Ramirez; production managers, Simyon Maryachim, Miguel Mendoza; first assistant director, Bella Friedman; set design, Yevgeny Sviteteley; music, Carlos Farinas; artistic consultant and costumes, Rene Portocarrero; sound production, V. Sharon, R. Plaza; choreographer, A. Suez; editor, N. Glagoleva; montage assistant, Lida Turina; orchestra directors, E. Kachaturian, M. Duchesne; continuity, B. Trabkin, A. Vinokurov; makeup, V. Rudinoy, L. Caceres; production assistants, M. Volovich, O. Zernov, G. Tanner, L. Garcia, R. Brutes, S. Miguel; second-unit directors, J. Rouko, K. Ctenkin, T. Vargina; senior translator, Pavel Grushko; lighting crew, V. Mikhailov, G. Cantero; pyrotechnics, V. Pugachev, E. Fong, B. Sukharetzky; production crew, L. Obregon, L. Carrillo, J. Cruz, J. Varona, K. Garcia, E. Musteler, M. Trabas, M. Noah, F. Labrador, A. Fonseca, R. Farinas; stills, R. Dovo; running time 141 minutes; copyright 1964 by Mosfilm, 1994 by Filmexport Studios, 1995 by Milestone Film & Video.

Maria/Betty, Luz Maria Collazo; Pedro, Jose Gallardo; Alberto, Sergio Corrieri; and Alberto Morgan, Fausto Mirabal, Mario de las Mercedes Diez, Jesus del Monte, Mario Gonzalez Broche, Salvador Vud, Raul Garcia, Jean Bouise, Celia Rodriguez, Roberto Garcia York, Barbara Dominguez, Luisa Maria Jimenez, Tony Lopez, Hector Castenada, Rosando Lamadris, Roberto Vilar, Roberto Cabrera, Alfredo Alvila, Jose Espinosa, Isabel Moreno, Manual Mora; Voice of Cuba, Raquel Revuelta; Russian readers, N. Nikitina, G. Yepifantzev.

Slew of Product Launches and Enhancements at NAB '95 in Las Vegas

compiled by Marji Rhea

Film Post Products

Avid introduced several new products and enhancements to its family of film post products at NAB '95, including a next-generation, multi-camera editing technology, the MediaShare storage solution, Film Cutter entry-level digital nonlinear film editing system for independent filmmakers and small studios, and the AvidDroid hardware controller.

The company's next-generation multi-camera technology will allow editors to view multiple angles of coverage during editing and playback and display line cut and grouped camera views side by side. Avid's multi-group feature allows specified shots to be grouped using a single command for quick comparisons of takes with the same timecode.

MediaShare storage technology allows up to three Avid Media Composer or Film Composer systems to simultaneously access common storage devices. The Film Cutter is a 24-frames-per-second editing system based on the same fifth-generation editing software as Avid's Film Composer system. It features a customizable, easy-to-use interface optimized for film editing. It also supports creation of dissolves, fades, dips, motion effects, freeze frames and titling from within the system, allowing users to better visualize film projects during the editing stage. The system offers a variety of offline image resolutions, two channels of CD-quality audio and frame-accurate negative cut list generation.

The AvidDroid hardware controller is a result of Avid's ongoing codevelopment relationship with Lucasfilm Ltd. It is a customizable device that combines manual editing controls such as jog shuttle and mouse function-

ality with Media Composer keyboard commands. The AvidDroid consists of an LCD panel display, keyboard/track ball component and a hot knob that can be quickly swapped in at any time to provide either VTR-like or film-style shuttle control, making it an efficient editing tool for both film and video.

For information: Avid Technology, Inc., Metropolitan Technology Park, One Park West, Tewksbury, MA 01876, (509) 640-6789, FAX (508) 640-1366.



Compact Camera Case

Band Pro Film/Video's Kata-
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handles and padded shoulder strap,
ample internal and external pockets with
snap lock and velcro closures, and clear
plastic window pockets for ID and digital
camera setup cards. Other accessories,
such as tripod bags, lighting kits,

and video vests, are also available in this line.

For information: Band Pro Film/
Video, 425 North Moss St., Burbank, CA
91502, (818) 841-9655, FAX (818) 841-
7649.

High-speed Network

Sonic Solutions' MediaNet high-speed network for bandwidth-hungry applications such as digital audio, digital video and graphics links disparate systems from Sonic Solutions, Radius, Data Translations and Silicon Graphics together in a seamless multimedia work group. MediaNet's open architecture is compatible with standard Macintosh and Networked File System (NFS) applications.

MediaNet includes a specialized Media Optimized File System and Media Optimized Transport Protocols running on high-speed client and server network cards for the Macintosh. The MediaNet cards provide a high-speed link between Mac (and Unix) platforms on the network, and they directly manage the files on disks attached to the MediaNet server card's onboard SCSI controllers. This permits high-speed, real time data transfers among systems without affecting the performance of the individual computers in the network. Because of the intelligence built into the card's real-time operating system, MediaNet can manage network and file system activity for

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real-time applications, while simultaneously providing a completely vanilla-flavored Apple Filing Protocol/Apple Share interface to standard Macintosh applications.

For information: Sonic Solutions, 1891 E. Francisco Blvd., San Rafael, CA 94901, (415) 485-4800, FAX (415) 485-4877.

Virtual Sets

Microsoft recently previewed at NAB its "Virtual Theater" performance-animation software technology. The technology is a direct evolution from Softimage 3D, Microsoft's 3-D animation software for film, video and broadcast professionals, and is a run-time software solution designed to produce live, real-time animations. Virtual theater is designed specifically to optimize the Onyx parallel-processing geometry and display engine from Silicon Graphics, Inc. Virtual theater is 3-D technology that enables broadcasters and interactive developers to produce live, on-air performance in real time. The technology also adds a new level of power to the Softimage 3-D motion-capture capabilities, which were designed to free animators and artists from the tedious task of keyframing every detail of an animation. Virtual theater removes all translation and programming requirements because the software provides a completely integrated environment and intuitive interface.

At NAB, Microsoft showed virtual studio and virtual character capabilities utilizing a typical broadcast bluescreen studio setup with standard broadcast video equipment. An Onyx and Indigo II generated a succession of virtual backgrounds, foregrounds, props and synthetic characters that interacted with the crowd and a live presenter. Live actors were keyed between layers of virtual 3-D backgrounds and interacted with a virtual 3-D character using real-time compositing techniques. Motion-capture systems were provided by Hybrid Vision, INA and Polhemus, Inc.

Applications for virtual theater technology include virtual studios and live sets, live synthetic characters for broadcast and interactive TV, 3-D game simulations, run-time players of 3-D elements for interactive media, virtual reality for location-based entertainment, film and video director-controlled com-

puter graphics animations, fast previews for postproduction special effects, and previsualization and walk-throughs for engineering and architects.

For information: Softimage, (800) 576-3846.

Jib

Cinekinetic's McJib jib offers a rotating camera cradle that enables the operator to shoot from either side or straight in front of the jib. It is now possible for the pan handle to clear the end of the jib arm, providing full 180-degree pans of the camera.



Both overslung and underslung operation can be accomplished simply by inverting the bowl. This is done in seconds with Cinekinetic's unique built-in connector eliminating the need for external tools.

Owners of post heads can do ground level shots as well as those impressive shots where the camera glides effortlessly across a dinner table between the dinner glasses or through a doorway at eye level.

McJib's trim weight provides minuscule variations in balance with a twist of the wrist. Operators can make the jib either front or back-heavy, according to their preference.

The jib is based on the company's MicroJib Pro design and can be set up in seconds. The spider connector enables the operator to attach the jib to any professional tripod without additional accessories.

The unit weighs only 27 pounds and supports payloads up to 100 pounds. It offers a crane movement of five feet with a radius pan of only 55°. Clutch-controlled heavy duty ball bearings provide silky smooth pan and tongue

moves and offer full lock and variable drag through all axes. A 150mm bowl is also available separately.

Standard barbell weights or Sand Sacks are used to counterbalance most cine and video cameras. Keyed heavy-duty handlebars (included) let the operator drive the jib from either the front or back of the unit.

Made from heat-tempered aluminum castings and custom-designed sculpted extensions, McJib folds to fit inside a compact 7" X 41" X 14" optional canvas traveling case.

For information: Cinekinetic, P.O. Box 73063, Las Vegas, NV 89170, (702) 731-4700.

Lenses

Fujinon has introduced a switchable format handheld lens, a high zoom ratio field production lens, and two 20X wide studio lenses.

The V-Grip Series handheld television zoom lenses feature the company's V-Format aspect ratio conversion technique, which compensates for reduction in angle of view when switching from the 16:9 aspect ratio to the 4:3 aspect ratio in switchable cameras. The switch for V-Format conversion is conveniently located on the extender housing along with the 2X extender. The series allows zoom speed to be varied from 1 to 5 seconds from wide to tele, and adjusts



from 3 to 17 degrees to ensure a comfortable wrist position from any user.

The Ah70X9.5ESM, with a focal length of 9.5mm to 665mm (1330mm with extender deployed) is one of the highest zoom ratio field production lenses ever offered for television applications. It provides high magnification and long focal length without sacrificing wide angle and close-up performance. The minimum object distance of the lens is 2.7m and minimum focal length is 9.5mm, which provides a broad 49.7 degree field of view. At full telephoto (without the extender), the angle of view be-

comes a narrow 0.75 degrees.

Maximum aperture is f-1.6 from 9.5 to 313mm, and f-3.4 at 665mm, and maximum photometric aperture (T-number) is T-1.78. The lens is sealed to prevent entrance of dust, and contains a desiccant compartment to remove condensation caused by extreme changes in temperature. The lens measures 9 1/8" H. X 9 1/8" W X 24" L and weighs 47 pounds.

The Sh20X5.4ESM studio lens for 1/2" cameras and Ah20X7ESM for 2/3" cameras feature wide angle, fast aperture, and optional FIND diagnostic system. The Sh has a focal length range of 5.4 to 108mm and maximum aperture of f-1.4. The Ah has a 7 to 140mm focal length range and maximum aperture of f-1.4 to 124mm and f-1.6 at 140mm. Both lenses have a minimum object distance of 0.5m.

For information: Fujinon, 10 High Point Dr., Wayne, NJ 07470, (201) 633-5600, FAX (201) 533-5216.

Video Post System for Macs

Pinnacle Systems announced at NAB that the company's Alladin open-architecture desktop video postproduction system is now available for Apple Macintosh and Power Macintosh users.

For information: Pinnacle Systems, (408) 720-9669, FAX (408) 720-9674.

Enhanced Editing System

Da Vinci, a Member of the Dynatech Video Group, has announced new features to their TLC Editing System. After purchasing the TLC product line from Time Logic, they added a more powerful CPU, VGA monitor support, additional RS-422 ports and an optional hard-drive.

For information: Dynatech Video Group, 5410 NW 33rd Ave., Suite 100, Ft. Lauderdale, FL 33309, (305) 484-8100, FAX (305) 486-7936.

Virtual Set Technology

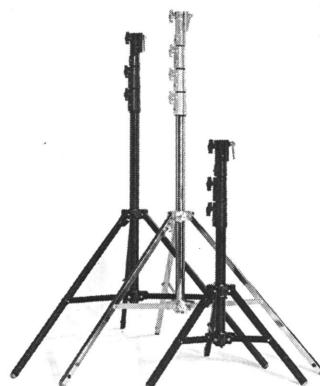
Silicon Studio, the entertainment subsidiary of Silicon Graphics, Inc., has unveiled its 3D "Virtual Set" technology for the television broadcast industry. Using Silicon Graphics' powerful Onyx graphics supercomputers and special hardware and software from Silicon Studio partners, the new technology creates

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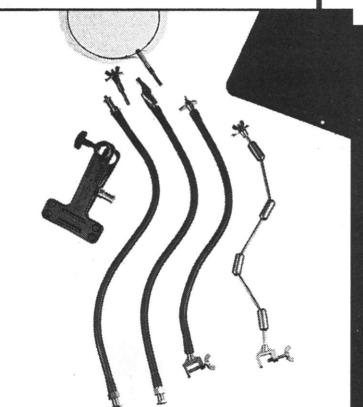
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computer-generated 3-D environments that allow live announcers and on-camera personalities to interact with realistic virtual environments.

Virtual Set technology combines live announcers and a computer-generated graphics "set" created in real time and three dimensions in the television broadcast studio, with 3-D environments that are realistic and quickly changeable.

Virtual Sets are created using a combination of traditional bluescreen backgrounds to capture the image of the on-camera personality, and complex computer-generated graphics created on the Onyx RealityEngine2 system. The two are then composited, with the elements and proportions of the 3-D set changing in real time to accommodate camera pans, zooms and tilts, as well as transitions from camera to camera. The result is a 3-D environment in which on-air personalities can move behind and in front of Virtual Set elements. These computer-generated set solutions can also incorporate other characters, such as performance animation virtual actors, to interact with on-camera announcers. Live video can also be input into the 3-D graphics background.

For information: Silicon Graphics, 2011 N. Shoreline Blvd., Mountain View, CA 94043-1389, (9415) 390-2527.

Stereo Mixer

Cooper Sound Systems' CS 104 ENG/EFP-style four-channel stereo mixer, introduced at NAB, is housed in an all-metal chassis with a machined, anodized aluminum front panel. Access to the top, bottom and back panels will not be necessary for operator adjustment as all controls are located on the front and two side panels. The audio path is clean and quiet, as with the Cooper CS 106 +1/108 +1 location mixers.

The mix features Jensen transformer coupled inputs and outputs and multiple balanced and unbalanced output connectors for maximum versatility in the field. The mixer operates on either eight internal AA cells or external DC via a standard 4-pin connector.

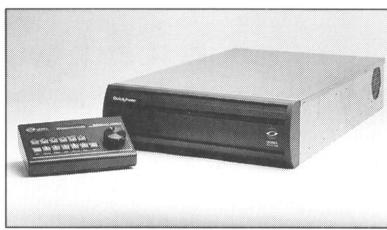
The unit includes four mono input channels that can be linked for stereo applications, custom-designed, low-profile control knobs and recessed analog meters with limiter threshold LEDs. Pre-fade listen is included for each chan-

nel to quickly isolate problems in the field.

For information: Cooper Sound Systems, 31952 Paseo de Tania, San Juan Capistrano, CA 92675-3919, (714) 248-1361, FAX (714) 248-5256.

Digital Video Disk Recorder

Sierra Design Labs' Quick-Frame EX48 is the latest in the company's Quick-Frame family of real-time digital video disk recorders. It is a high-end component video storage solution for broadcast, production and post-production facilities, and computer-based animation and graphics systems with long-format requirements that have relied on tape-based storage systems in the past.



The EX48 can store just under 48 minutes of uncompressed 8-bit 4:2:2 component digital video in 5 1/4 inches of rack space and, like other Quick-Frame models, can be configured for 4:2:2:4 and 4:4:4:4 operation.

The new model features VTR-compatible RS422 control, true real-time non-linear playback, 8/10 bit and 525/625 selectable video formats, Ethernet with TCP/IP, RSH and RCP support, and a multi-function SCSI port. Digital audio and SMPTE time code storage, and SCSI Framer high performance video server options are also available. The included Quick-Track trackball/menu-driven soft control panel is now complemented by an optional full-function control panel with numeric keypad.

For information: Sierra Design Labs, 999 Tahoe Blvd., Incline Village, NV 89451, (702) 831-7837, FAX (702) 831-5710.

Tripod Accessories

Miller Fluid Heads has extended the accessory range for its Series II ENG/EFP support systems, including above-ground spreaders for all Miller Series II tripods; redesigned rubber feet for use with above-ground spreaders, and

lightweight fixed and telescopic pan handles for all fluid heads.

The above-ground spreaders are lightweight and easy to attach and are designed to increase the torsional rigidity of the overall camera support system. The increased-traction rubber feet were developed for use with tripods using above-ground spreaders. The new rubber feet feature a wider pad diameter than previous models, and incorporate a low center of gravity tripod mounting point to enhance overall system strength.

For information: Miller Fluid Heads, 30 Hotham Parade, Artarmon 2064 Australia, 61-2-439-6377, FAX 61-2-438-2819.

Film Scanner

Rank Cintel has introduced Klone, a high resolution film scanner featuring a Bell and Howell clapper gate and Nikor lens. To ensure precise color matching, a single CCD sensor is used, with the film scanned in three passes. A single 35mm frame can be scanned in about five seconds.

For information: Rank Cintel 25358 Avenue Stanford, Valencia, CA 91355, (805) 294-2310, FAX (805) 294-1019.

Removable Lightbanks

Chimera has two new lines of removable front screen lightbanks that complement the Video Pro and Quartz lightbank lines. The lightbanks allow the user to attach and remove the front screen diffusion rapidly. Either clip in any type of diffusion to the lightbank, or velcro in one of the three supplied Chimera fabrics: full Chimera diffusion, 1/2 grid cloth, or 1/4 grid cloth. The company will also be offering color correction front screens.

For information: Chimera Photographic Lighting, 1812 Valtec Lane, Boulder, CO 80301, (303) 444-8000.

Editing Line for Windows

D-Vision Systems has expanded its professional editing product line to support Windows NT and Windows 95. The expansion is comprised of D-Vision OnLine, a family of products targeted for broadcast and video professionals; D-Vision FilmCut, a family of products for film professionals; and fully integrated, high-performance D-Vision PostSuite workstations.

OnLine supports broadcast quality video, a variety of inputs and outputs including component analog and serial D-1, 24 tracks of 50KHz audio, real-time effects, alpha channel keying and anti-aliased graphics. OnLine provides everything producers need to finish video post on their desktop without going to an online facility.

The second family, D-Vision FilmCut, is designed to bring the speed and creative freedom of digital media to filmmakers in an intuitive, film-style editing tool. It includes 24 frame-per-second capture and editing for frame-accurate film conforming, up to 48 tracks of audio mixing and an easy-to-use film jog option. Like OnLine, D-Vision FilmCut also supports 50/60 field per second video.

Products in the two software families are available as software only or as part of an economical kit bundled with D-Vision's Motion JPEG Video Boards.

PostSuite is a family of fully integrated Windows NT workstations, optimized for capture, editing and playback of high-quality digital media. These workstations include either D-Vision OnLine or D-Vision FilmCut software and feature dual Pentiums and simultaneous EISA and PCI slots. They are available with a wide range of inputs and outputs including component analog, serial D-1 and up to four channels of DAT audio.

As a native video for Windows and QuickTime editor, the new products can edit directly over a network from a variety of third party media servers, share files with other Windows programs, and support more than 200 standard hard drives. D-Vision's new software is fully OpenDML (Open Digital Media) compliant, allowing the software to support multiple algorithms and compression boards such as the Matrox Digital Video Building Blocks System, Intergraph's Video Engine and the Truevision Targa 2000.

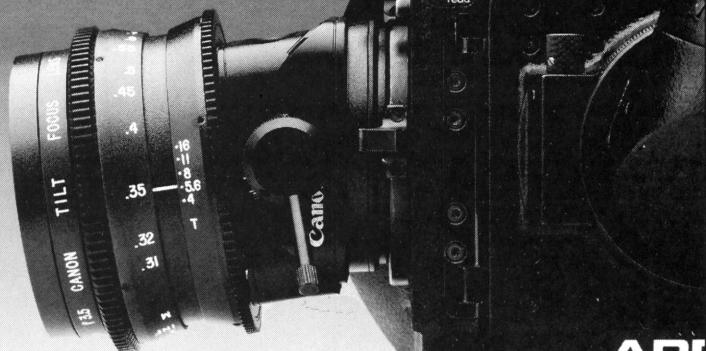
For information: D-Vision Systems, Inc., 8755 West Higgins Road, Suite 200, Chicago, IL 60631, (312) 714-1400.

Portable Timecode

The Clockit Timecode system was developed to fill the need for accurate portable timecode on location and is compatible with existing equipment. The timecode generator is very accurate, giving

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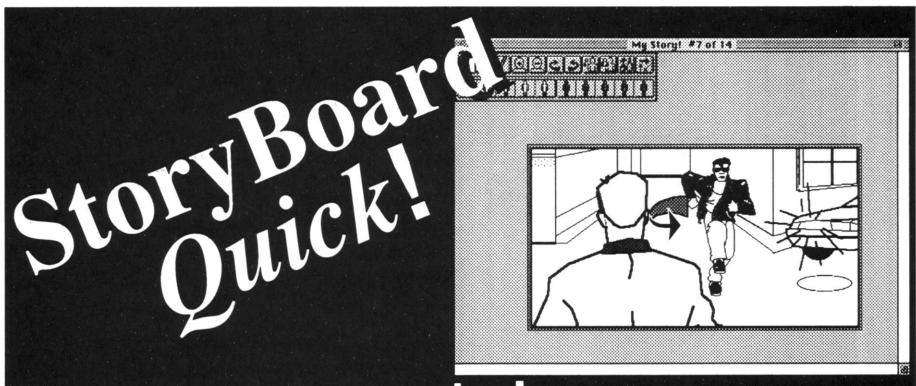
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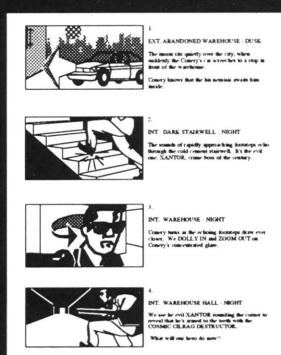
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ing under one frame a day drift. The Clockit Xtal can be tuned in $\frac{1}{10}$ ppm steps so that calibration errors between the Clockit system and units which cannot be slaved (such as film cameras) can be minimized by tuning the Clockit units to the Xtal of the camera. Tests have shown that drift between Clockit and film cameras without tuning is under one frame in eight hours; with tuning this difference can be more than halved.

The Clockit modules are small in size, have low power consumption and are ruggedly built. The modules generate all frame rates — 24, 23.98, 25, 30, and 29.97 — can be jam synced from an external source, and are fully Ascii Aaton compatible.

Four modules are available, and all can be used to lock, slate or burst audio recorders and cameras used in a video or film shoot. The Clockit Master Slate is a compact timecode slate with built-in generator reader. The Lockit Box is a compact timecode and video-sync generator. The Clockit Controller is a timecode masterclock that sends or receives timecode, recognizes frame rates, and measures differences between two timecodes to a hundredth of a frame. The controller can be used to set up and check timecode during a shoot. The ATM Burst Generator is a timecode burst generator for non-timecode recorders such as Nagra mono and stereo DATs.

For information: Ambient Recording, Konradinstraße 3, D-81543 München, Germany, 49/89/651/8535, FAX 49/89/651/8558.

Xenons

Attitude Specialty Lighting (formerly Steven J. Heller, Inc.) has introduced 7K and 2K Xenons and a new controller for the Lightning Strikes machine. The Xenon heads weigh only 45 pounds and plug directly into the power source, eliminating the need for unpredictable head to ballast cables. The Lightning Strikes controller enables the machine to simulate an explosion more realistically.

For information: Attitude Specialty Lighting, 1103 Briercliff Dr., Orlando, FL 32806, (407) 896-7960, FAX (407) 897-0940.

Canopies

KD Kanopy's canopies are lightweight, easily raised by two people with no loose parts or ropes, and store

compactly in a carry bag roughly the size of a golf bag. The Majestic model's 10' X 10' aluminum frame weighs only 48 pounds.

The tops are made of high-tenacity polyester oxford fabric, which is fire-retardant, water resistant and treated to resist ultraviolet rays. The tops come in an array of colors and can be customized with lettering and graphics.

For information: KD Kanopy, 3755 W. 68th Place, Westminster, CO 80030, (303) 650-1310, FAX (303) 650-5211.

Animation Packages

Wavefront Technologies' Studio 21 animation packages for 2-D and 3-D graphics professionals combine Wavefront's most popular software modules. The Media Studio package (consisting of Media Express, Media Pro, Media Expert and Media Master) is for film, video, broadcast and entertainment purposes; the Interactive Studio is geared for electronic games and location-based entertainment; and Visual Studio is for architecture and engineering visualization.

Studio 21 is based on Wavefront's modeling, animation, rendering, and composition technology. Each package brings together various combinations of the company's Explore, Visualizer, Cinesuite (Composer and Visualizer Paint), Kinemation, and Dynamation software products.

Also new from Wavefront is ArcVision Graphics software for architectural visualization, which creates computer animation to illustrate how buildings will appear within existing environments. The software uses the company's Interactive Photorealistic Rendering technology for interactive fine-tuning of all lighting, textures, and materials in the scene.

For information: Wavefront Technologies, 530 East Montecito St., Santa Barbara, CA 93103 (805) 962-8117, FAX (805) 963-0410.

Matte Box System Case

ProSource's Matte Box System was designed to hold any 4 X 4 matte box system complete with support rods and french flag. It can also hold and protect over 20 4 X 4 glass filters.

The heavy-duty Pelican case measures 19" X 14"D X 8"H. Horizontal

dividers made from a wood composite material separate and protect the glass filters in two rows. Removable dividers provide additional space for housing lens hoods and accessories.

The cases feature a molded hand grip, locking flanges and multiple latches. The O-ring seals with purge valve make these cases virtually moisture proof.

For information: ProSource, 1515 Black Rock Turnpike, Fairfield, CT 06430, (203) 335-2000, FAX (203) 335-3005.

Character Generator

Videonics' PowerScript character generator is designed for use in all video postproduction, multimedia, industrial and professional videography applications and is a stand-alone or computer networkable.

PowerScript includes a rack-mountable, all-metal central processing unit, keyboard and mouse. The system supports PostScript and uses digital video technology to produce high-impact, fully anti-aliased characters, animation and graphics with 17.5 ns effective pixel resolution. The video is digitized at 4:2:2, oversampled at 20 MHz using 10-bit luminance sampling (26-bit overall).

Equipped with a full-frame TBC and synchronizer, the PowerScript offers 35 built-in fonts. PostScript fonts can also be added from the user's desktop computer.

A fast and intuitive user interface provides real-time PostScript imaging via its built-in RISC processor. A powerful object-based drawing tool and text editor is built-in. For added flexibility, two Type III PC Card slots and an RS-232 serial port are built-in to perform storage, control, networking and other functions.

For information: Videonics, 1370 Dell Ave., Campbell, CA 95008-6604, (408) 866-8300, FAX (408) 866-4859.

HMI Lighting System

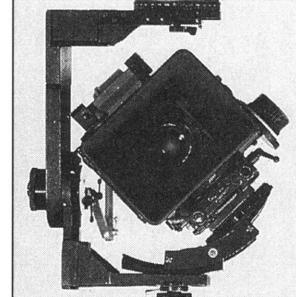
The Kobold EFP 400 HMI Lighting System for electronic field and feature production has an open-faced light head with a focusing ratio of 9:1 and an ignite button conveniently located on the rear of the fixture. The four-leaf barndoor has spring clips for gels and can be attached within seconds. Since its total weight is under six pounds, the light

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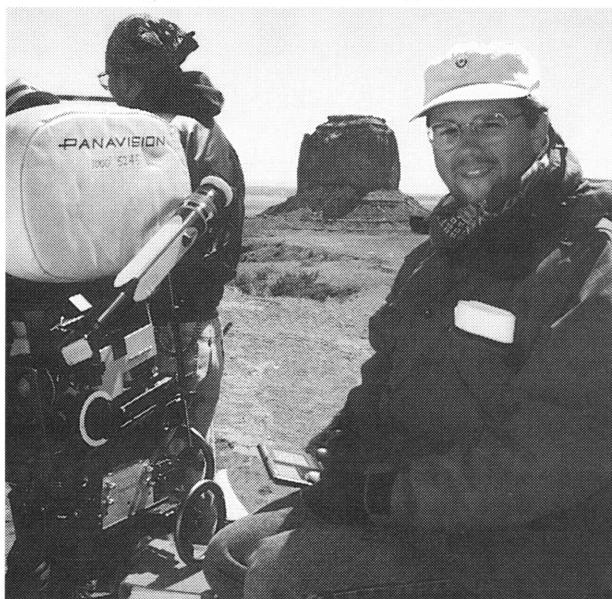
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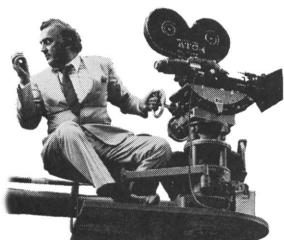
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head easily mounts to any stand and can even be suspended from a scissor clamp.

The AC ballast incorporates the latest in square-wave technology, assuring flicker-free shooting using any shutter speed or frame rate setting. Automatic line voltage switching from 110-230 volts is standard on the ballast.

A dimmer control on the unit can vary the lamphead output by as much as 40%. This is especially useful when trying to match base light levels of interior/exterior productions.

The EFP 400 kit includes a lamphead with safety glass, stand mount, head to ballast cable, 400W MSR lamp, four-leaf barndoors/gel holder, AC ballast, glass diffusion filter and a custom ATA travel case. Optional accessories include a dichroic filter (5600K to 3200K), soft transport case and Chimera softbanks of various sizes.

Also from Kobold is the Fresnel 200 portable HMI daylight system. The Fresnel 200 is a compact, focusing AC HMI system incorporating Fresnel lens technology for location use where light control with a smooth even field from spot to flood is essential. The combination of single-ended arc bulb technology and square-wave electronic ballast assures flicker-free shooting with any shutter speed or frames-per-second setting.

The lamphead has a 3.7mm Fresnel lens with anodized aluminum reflector. The total weight of the lamphead is only three pounds — a great advantage when mounting the unit on small light stands and scissor or Mafer clamps. The compact AC ballast features auto-line switching from 120 to 230 volts. It has a built-in dimmer control which will vary the light output by 40%.

For information: Broadcast Marketing International, 1515 Black Rock Turnpike, Fairfield, CT 06432, (203) 335-2003, FAX (203) 335-3005.

Points East

Hundreds of filmmakers and others in the film industry gathered last May at WRS Motion Picture and Video Laboratory in Pittsburgh for the First Annual WRS/Laura Napor Film Grant Award Presentations. The event was conceived by WRS principal Jack Napor to help filmmakers to follow their dream.

The Laura Napor National Award, one of two grants awarded, is dedicated in honor of Napor's late mother and offered \$5,000 worth of film processing at WRS, \$5,000 worth of Kodak film stock, and \$5,000 worth of lighting or equipment rental from Pittsburgh-based Performance Lighting Rentals. Applicants from all over the country submitted two-page treatments of the works they hoped to shoot and VHS copies of recent work. Filmmakers residing within a 100-mile radius of Pittsburgh were also invited to apply for the Laura Napor Pittsburgh grant, which was specifically established to promote local film activity. The Pittsburgh award offered \$2,500 worth of film processing, lights and Kodak stock respectively.

This year's five Pittsburgh finalists included Tara Alexander for *The Jazz Project*, Brian Haughin for *Forgotten Pittsburgh*, Keith Jackson for *Four Groomsmen & A Wedding*, Kenneth Love for *Frank Lloyd Wright and Japanese Art*, and Tom Megalis for *Crab*.

National Award finalists included Scott Balceruk and Craig McTurk for *Harlem Blues & Beyond*, John Bokenkamp for *After Sunset*, Jim Lane for *The Projectionist*, Tom McCordle for *The Enclave*, and Keith Thomson for *The Mantis Murder*.

The winners were chosen by a panel of judges that included Grover Crisp, director of Asset Management for Sony Pictures Entertainment; Dawn Keezer, director of the Pittsburgh Film Office; Pittsburgh filmmaker Russ

Streiner; *Pittsburgh Post Gazette* critic Marilyn Uricchio; and Carl Ziebe from the National Geographic Society. Megalis won the Pittsburgh area award for his animated short series *Crab*, and Thomson won the National Award for his feature-length film *The Mantis Murder*.

New York filmmaker Thomson applied for the WRS grant without ever believing he would win. "I've been nominated for other awards shows," says the director, who had a short film, *Cupidity*, in the Sundance Film Festival when he filled out forms for the WRS grant, "and I never won, so I didn't go to this one."

For Thomson, the award means he'll be able to put more production value into *The Mantis Murder*, budgeted at \$245,000 and scheduled to begin shooting this summer in Connecticut. The story, which Thomson calls a cop mystery, deals with the Connecticut law that makes killing a praying mantis illegal.

Thomson learned his craft during his stint as an advertising copywriter at New York's Saatchi and Saatchi, when he began directing commercials in-house. "You learn a lot about the film business in advertising, and more importantly, you learn a lot about politics," he notes.

Thomson considers himself fortunate to work with director of photography Gerard Sava, who shot *Cupidity* and will shoot *Mantis*. "It's very rare that you meet someone who shares your concepts so completely," says Thomson.

Napor, who addressed the audience on behalf of WRS, expressed his concern for the future of filmmaking, noting that he hoped to help young directors get a leg up by making their first film. "We are committed to fostering a creative workplace," he stressed. The guidelines in the Napor/WRS grants

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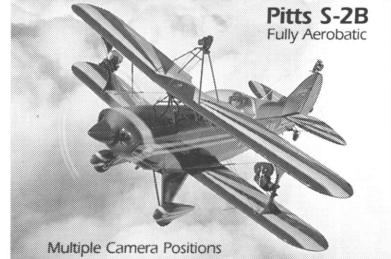
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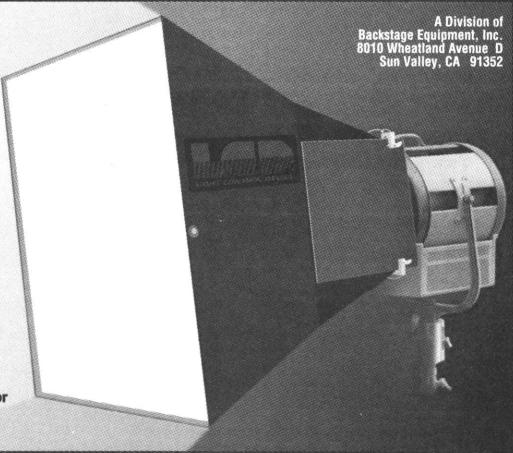
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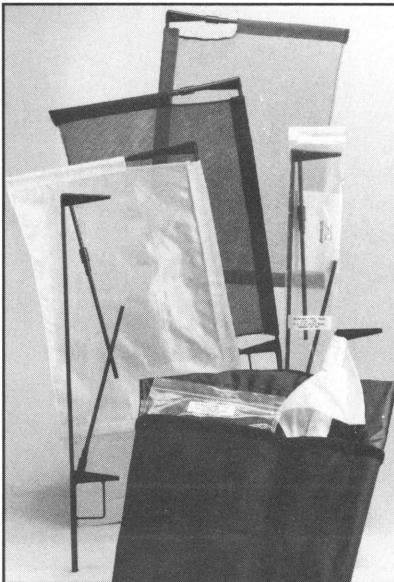
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were unique in that they did not confine the filmmakers to specific parameters. Though several of the Pittsburgh award finalists did make use of their native locale in their films, location was not a criterion, nor was subject matter. "We got a wide range of projects," noted Rebecca Redshaw, director of technical sales and service for WRS, who coordinated the grant submissions and the evening's events.

WRS is well known in Pittsburgh and is now on a first-name basis with most of Hollywood, thanks to the facility's special expertise in restoration. When Orson Welles' lost classic *Othello* surfaced several years ago, damaged after years of improper storage, WRS's restoration department helped to put it back in pristine condition. More of WRS's handiwork can be seen in restored versions of *Midnight Cowboy* and *Raging Bull*.

Future WRS/Napor grants are expected to include the same offerings as the 1995 slate, and may be expanded to include other areas in which the facility services the film community. WRS also has a video duplication department for industrial, special interest and home videos, to produce VHS product in real time NTSC and PAL and high-speed EP and PAL. A four-suite telecine includes two digital and two analog suites to provide transfers from Bosch and Rank, with direct transfers to NTSC and PAL. The video post department uses linear and nonlinear systems including Avid, Bravo, Softimage, and SGI Graphic systems. An entire audio department services all facets of film, video and audio-for-audio recording.

Napor notes that winners can use their prize "certificates" any way they like ("If they want to use their money's worth in optics, or just in duping or in dailies, that's fine with us," he explains). He adds that the grant was particularly appealing to filmmakers whose films were optical-intensive, "because \$5,000 worth of optics or lighting here goes a lot further than it does in Hollywood or New York."

Applicants for the next Napor/WRS Awards must submit their treatments by January 15, 1996, to WRS/Napor Awards, WRS Motion Picture Lab, 1000 Napor Blvd., Pittsburgh, PA 15205. All queries and submissions should be sent to the attention of Rebecca Redshaw.

Books in Review

by George Turner

Tom Mix

by Paul E. Mix
McFarland, 336 pps.,
library binding, \$35

Fairly close on the heels of Robert Birchard's landmark *King Cowboy: Tom Mix and the Movies* comes a new book about the great movie cowboy. Although a less polished work than its predecessor, Paul Mix's meticulously assembled effort offers some welcome additions to Mix lore, including a family genealogy and a lot about his circus adventures. There are about 80 photos, many of which are unfamiliar. The author, a design engineer in Austin, Texas and a distant relative of the fabulous Tom, did a lot of traveling and interviewed many friends and co-workers of the star during 30 years of gathering information for this biography.

Once more, the author's top priority was separating the truth from the actor's own tall tales and the even more wildly imaginative material dreamed up by press agents. He notes that Mix objected strenuously to Fox's fancy embroidering of his life. [This reviewer was told by Mix's pal, football great and minor Western star Reb Russell, that Mix improvised many of his wild stories to entertain children. "Once when we were drinking I asked him why he told kids such whoppers. Tears came into his eyes and he said, 'Reb, I tell 'em what they like to hear. Sometimes I'm telling the truth and other times I'm just a damned liar.'"]

Some writers added their own fiction to the Mix stew. Paul Mix mentions Milt Hinkle's insistence that Tom's real name was Arthur Levanthau and he was the son of a Jewish-Italian coal miner and a Gypsy girl. In truth he was Thomas Mix, born near Driftwood, Pennsylvania. His father was of English-Irish ancestry and his mother came from a Pennsylvania Dutch family.

Even after all the tinsel is peeled off, Tom Mix emerges as quite an

hombre and a true star. Among the virtues of this book are a filmography and a detailed chapter on Mix's last picture and only serial, *The Miracle Rider* (1935).

The Cradle Will Rock

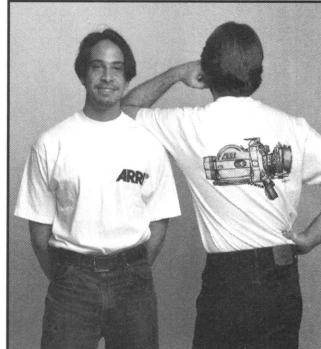
by Orson Welles
Santa Teresa Press,
123 pps., cloth, \$35

In 1937, a year before the *War of the Worlds* broadcast and four years before *Citizen Kane*, 22-year-old "boy wonder" Orson Welles directed and co-produced a controversial operatic play in New York called *The Cradle Will Rock*. It was written and composed by Marxist activist Marc Blitzstein, who scored it for full orchestra. The play's production as a Federal Theatre project was prohibited by government decree, and a dozen armed guards took over the Maxine Elliott Theatre on opening night. The company and the formally dressed audience trekked across town to the Venice Theatre and presented their play without scenery or orchestra. It was an instant success. Welles, whose face would be on the cover of *Time* within a year, considered it the turning point of his career.

The last original screenplay completed by Orson Welles, also titled *The Cradle Will Rock*, was written in 1984, a year before his death. This was not a rewriting of the Blitzstein work but a dramatization of the adventures of Welles and his colleagues in getting the original produced. Actors would portray the youthful Welles, Virginia Nicholson (his wife), John Houseman, Blitzstein and others. The film came very close to being produced by a group that included Michael Fitzgerald, John Landis and George Folsey, Jr. Ironically, the original play was a "Popular Front" story about labor unions, while the picture was slated as a non-union production. At the last moment, the financing collapsed. The budget was \$6 million, an ample sum at that time. Welles died a short time



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**David Samuelson's
"Hands-On" Manual
for Cinematographers**
Focal Press, 336 pps.,
flex binding, \$49.95

From England comes this interesting professional manual by a veteran cameraman, inventor and supplier of motion picture equipment. Printed in an unusual 5 1/2" X 11" format, the book contains a lot of practical information and is divided in 15 parts, as follows:

Part 1: Addresses of manufacturers of film cameras, filmstocks and video cameras. 2: Academy Awards and nominations. 3: Batteries. 4: Cameras (16mm and 35mm professional models only). 5: Camera maintenance, including lubrication diagrams, flange focal depth settings, lens mounting standards, steadiness tests, winterization. 6: Camera threading diagrams. 7: Composite photography, including travelling matte systems, computer images, front and rear projection, glass matte and bipack, double-exposure mattes, opticals and aerial image, shooting background process plates and input from Wally Gentleman on using stock background plates. 8: Electricity. 9: Equipment checklist. 10: Exposure. 11: Filmstocks, including 16mm and 35mm, special processing, camera to show-print flow chart, storage, running time tables, etc. 12: Filters. 13: Lens information, including depth of field tables. 14: Light and color. 15: Mathematics of cinematography, including calculations for electricity, exposure, film length, lighting, etc.

There is a good index, the language is clear and concise and there are numerous diagrams and tables in this useful reference.

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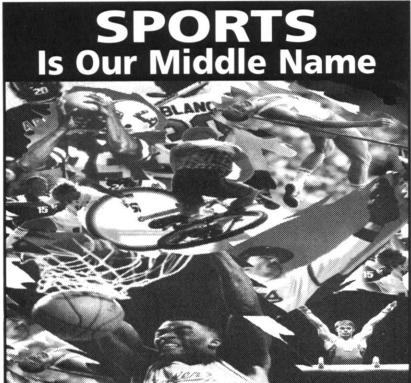
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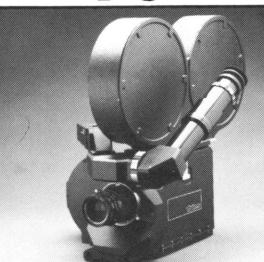
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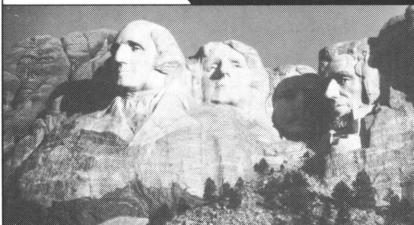
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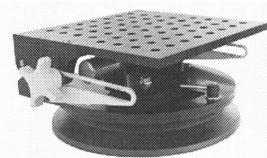
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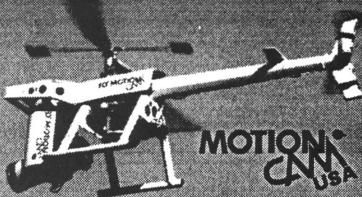
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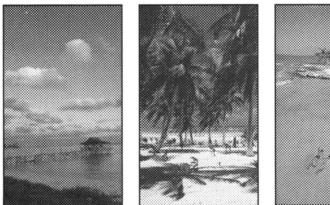
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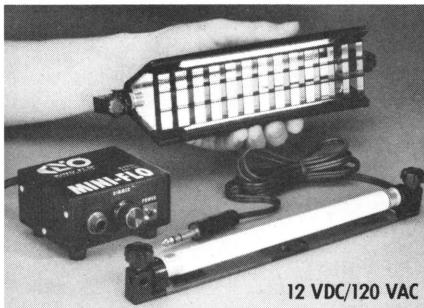
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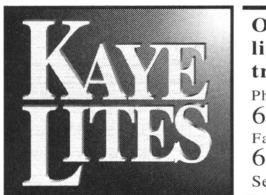
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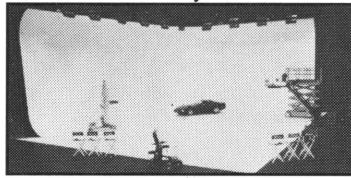


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In Memoriam

Hugh Edmund Gibson, ASC, a veteran cinematographer and second-unit director, died March 23 in Florida. According to his wife, Josephine, Gibson was a victim of cancer. He was 79 and had been a member of Camera IA Local 666 of Chicago for 55 years, and an ASC active member since 1976.

Born in New York City on August 23, 1915, Gibson received an early introduction into motion picture work as the son of Joe Gibson, a pioneer cinematographer who practiced the art while the movies were in their infancy. After years of working for studios in Fort Lee, New Jersey, the senior Gibson was assigned as a newsreel cameraman and moved his family to Miami, Florida. Hugh Gibson recalled fondly how his father "filmed such events as the action-filled 'derring-do' of Central American revolutions, with an occasional beauty contest thrown in, just for a change of pace."

By 1940, the junior Gibson was established as an assistant cameraman, and later as an operator, working freelance for many Hollywood cinematographers from all the major studios on movies that located in Florida. Among these were the Technicolor musical *Moon Over Miami*, John Ford's World War II epic *They Were Expendable*, Lewis Milestone's *A Walk in the Sun*, and Cecil B. DeMille's *The Greatest Show on Earth*, as well as *Key Largo*, *Slattery's Hurricane*, *Return of the Creature*, *Thunder Bay*, *The Kentuckian*, *Twelve O'Clock High*, *Easy to Love*, *Jupiter's Darling*, *On an Island with You*, *Strategic Air Command*, *Wild River*, *The*

Miami Story, *Beyond the Twelve-Mile Reef*, *Tammy*, *The Great Locomotive Chase*, *PT 109*, *Flipper* (the feature version starring a trained dolphin), and dozens more.

In 1959, still free-lancing, he became a director of photography. Much of his work was done for Ivan Tors Productions in Florida, for whom he photographed both features and television shows. Among the latter were *Everglades*, *Flipper*, *Gentle Ben* and *Jambo*. When Tors contracted to produce the underwater sequences of the fourth James Bond picture, *Thunderball*, Gibson worked on the project with his colleague Lamar Boren, ASC, creating what is widely considered

to be the finest underwater cinematography extant. Gibson was also director of photography of *Daring Games*, Tors' feature for Paramount starring Lloyd Bridges. Other feature credits include *Little Laura*, *Big John, Impulse*, *Godmothers*, *Sammy Somebody*, *Lady J. That Nice Boy*, *Wild Dame Hunter*, *Sometimes Aunt Martha Does Strange Things*, and others.

Gibson also photographed second units in Florida and the Caribbean for numerous pictures. In addition to John Wayne's controversial *The Green Berets*, he led second units on *Man in the Water*, *Safe at Home*, *Caribbean Adventure*, *Island of the Lost*, *Birds Do It*, *Gentle Giant*, *Hello Down There*, and *Superchick*. Between features and television shows, he made commercials for various New York and Los Angeles agencies.

— G.T.



From the Clubhouse

The ASC has two new active members, Gu Changwei and Peter James, and two new associate members, Alan Albert and Tak Miyagishima.

Gu Changwei spent four years in the department of cinematography at Beijing Film Academy, and two years later was hired as a cinematographer by the Xi'an Film Studio. There, he worked on *The Beach*, *The Magic Whip*, *King of Children*, *Red Sorghum*, and *A Project Coded as American Leopard*. He also served as cinematographer on *The Big Star*, *Ju Dou*, *Life on a String* (for the BBC's Channel 4), *Xia Lu Ying Hao*, *In the Heat of the Sun*, and *Farewell My Concubine*, which earned him Best Cinematography nominations from the Academy of Motion Picture Arts and Sciences and Camerimage '93.

Peter James started his career at age 15 in Sydney, Australia, working in the camera department of a film studio for five years, where he also received general training in all production departments. He then worked as the focus puller on the TV series *Riptide* before becoming one of the first Australian freelance focus pullers working in TV commercials. An interest in editing in the camera led him into documentaries; he worked on the BBC/Time-Life *History of the British Empire* series and several other award-winning Australian documentaries and short films.

At age 25, James shot his first film, *Willy Willy*, which earned him the Australian Cinematographer of the Year Award. He has since earned the award three more times, for *Caddie, Black Robe*, and *Alive*.

In the early 1980s James traveled to Canada and shot commer-

ials in Toronto. His first American feature was *Driving Miss Daisy*, and he has gone on to film four other movies with *Daisy* director Bruce Beresford: *Mr. Johnson, Rich in Love*, *Silent Fall*, and *Last Dance*. During the past three years he has also served as director of photography on *The Thing Called Love* and *My Life*.

Alan Albert, vice president of Clairmont Camera, has been involved in the motion picture industry for the past 23 years as a camera technician, research and development engineer and camera rental company executive. He studied film and was a teaching assistant at L.A. Valley College before being hired by Birns & Sawyer, where he became a camera and lens technician trainee. He eventually became technical supervisor there, and was subsequently hired by Clairmont/Engel as senior technician. When Clairmont/Engel became Clairmont Camera in 1981, Albert was hired for his current position as executive vice president.

Albert served on the Cine-technical Sub-committee of the Academy of Motion Picture Arts and Sciences for the 1990-1993 Academy Awards, and was an instructor at the UCLA Extension Arriflex Training Course from 1989-1993. He is a member of the Technology Council of the Motion Picture-Television Industry, and also has a background in audio engineering for film and multi-track studio recording.

Tak Miyagishima, senior vice president of engineering at Panavision International, began working in 1954 as an engineer/designer for a manufacturer whose clients included Panavision, then a small startup company. He took a job with Panavision the next year, and for



the first five years served single-handedly as the company's entire engineering department. The first projects designed under his guidance were the Ultra Panatar and Panatar 16, as well as various other anamorphic projection systems. He also worked during this period on the design of Camera 65, which came to be known as Ultra Panavision 70. He designed a new blimp to enclose the noisy 65mm rack-over camera, as well as the Ultra Panavision 70 system, consisting of the 1.25X anamorphic taking lenses and the projection attachments to achieve the aspect ratio of 2.75:1.

His next projects were the Super Panavision 70, a spherical taking system, a small studio camera and a hand-holdable 65mm camera (the Panaflex 65), and the "Mirage Lens," later used by Freddie Young, BSC, on *Lawrence of Arabia*, which was photographed in Super Panavision.

Miyagishima was also responsible for the lenses of the Panavision 35 anamorphic system, which did away with "anamorphic mumps," or fat faces. Other products designed and introduced during his earlier days at Panavision were the filter sizes which are now an industry standard; the Micro Panatar printer lenses, which allow 35mm anamorphic negative to be blown up for 70mm presentation; and other printer lenses such as the Technorama, Super Technorama, Vista Vision (Technorama), Ultra Panavision 70, and Super Panavision 70.

During Miyagishima's time at Panavision, the company has received two Academy Awards of Merit, the first in 1978 for the Panaflex Motion Picture Camera System and the second in 1994 for the Anamorphic Taking System.

Cinematographers Should Share the Spotlight

by Owen Roizman, ASC

What happened at this year's Academy Awards show during the cinematography category announcement was a travesty: Paul Newman neglected to mention the names of four of the five nominees. This is the second year in a row that a presenter's error has marred the Academy's recognition of photographic excellence; at last year's ceremony, Kirk Douglas omitted Conrad Hall's name from the list of nominees. Although I am annoyed that Mr. Newman did not try to rectify the mistake (to his credit, Best Cinematography winner John Toll did), I cannot put the blame entirely on him.

I feel that the error was set up by the fact that the clips chosen as samples of each cinematographer's work were each only four seconds long. If they had shown a still photograph for four seconds, it would barely have been enough time. Compared to the lengths of the clips shown in all the other categories, the "blink of an eye" clips in the cinematography category were demeaning to all directors of photography, not just the nominees. Whoever made those choices showed a lack of respect for the art of cinematography, and the training and skill that goes into it.

What I find strange is that within the industry, cinematographers are privately regarded with high esteem. When it comes time to acknowledge our contributions publicly, however, we are quite often neglected.

Let's face it, the cinematographer makes an enormous contribution to any motion picture, and bears a large responsibility in the filmmaking process. Vittorio Storaro has often suggested that the cinematographer is one of the authors of the film. I couldn't agree more. We are the authors of light. We capture the mood of the film through our use of composition, movement, light and shadow. We light the actors to make them look their best. Next to the director, ours is the most important behind-the-camera job. When we are hired, the pro-

ducer and director expect us to respect the budget and schedule, and to do our best to perform within those limitations.

Considering all of these responsibilities, I find it astonishing that cinematographers must fight to get their names into paid ads. That credit should be a given. I get a little crazy whenever I see an ad in which someone's name appears three or four times, but the director of photography is not mentioned at all.

I like to compare cinematographers to painters. In order to translate their artistic visions on canvas, painters must know how to mix their paints, apply their brush strokes, get the proper perspective, and so on. Cinematographers also need to have considerable expertise in order to help a (collective) vision reach the movie screen. Among their many skills, they must know about lenses, lighting, composition, color, movement, and using proper film exposure to achieve certain effects. A cinematographer must be a good technician, but this technical knowledge is just a foundation for artistic expression.

Why is it, then, that when critics review films, especially in the trade papers, they refer to the cinematography as a "tech" credit? I would hope that those trade critics, as well as all critics, could be better informed. Phrases like "lensing by" or "glitzy camerawork" are born out of an ignorance of the cinematographer's craft. We would be better served by quotes such as "the cinematographer captured the mood of the story through stylized (or realistic) lighting, exquisite compositions and beautiful use of colors and tonal balance." (This same problem dogs production designers, set decorators, and costume designers, who are also labeled as "tech" personnel. By the very nature of their titles,

these individuals are creators or artists.)

Unfortunately, because of such cavalier practices, the public is ill-informed about who does what in the film-making process. Audiences have been led to believe that the only creative people on a film are the actors and the director. I recently heard a cinematographer described as someone who is "below the line" but is expected to perform an "above-the-line" job. According to

Surely, if the Academy has enough time for a spinning-dog act, it can find time to properly honor the artists who have worked so hard to earn their moment at the podium.

this simplistic method of classification, the above-the-line people are the directors, writers, producers, and actors; the below-the-line people are everyone else. The above-the-line people are considered to be the artists (with the exception of the producers, though I am sure that some of them would argue that point), and the below-the-line people are considered to be the technicians.

Something is out of whack here. Let me hammer home my point. Cinematographers are artists first, technicians second. They put an indelible stamp on a film. When it comes time for the cinematographer to be recognized, it should be done in proportion to the size of the contribution they have made to a film. At the Academy Awards, the cinematography clips should be much longer, and they should also bear the name of the cinematographer and the title of the film. Surely, if the Academy has enough time for a spinning-dog act, it can find time to properly honor the artists who have worked so hard to earn their moment at the podium.

*Owen Roizman, ASC was nominated for a 1995 Academy Award for his work on the film *Wyatt Earp*.*



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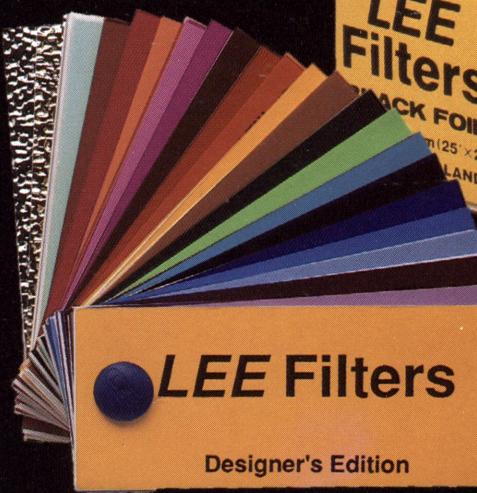
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